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TYPICAL FOUR-WHEELED SNOW PLOW IN USE IN NEW YORK

SNOW PLOWS FOR CITY USE

Cleaning Sidewalks, Opening Gutters and Piling Snow on Roadways—One Plow as Effective as Twenty-Five Laborers—Wheel-less, Two-wheeled and Four-wheeled Machines

SNOW PLOWS are used in cities for several distinctly different purposes. In small cities and in suburban sections they are used for cleaning the snow from the sidewalks, as the city is able to do this work more cheaply than individual owners who have only laborers with shovels to depend upon. In most cases, perhaps, the plows are used where no inconvenience is caused by throwing the snow both ways, as opposite vacant lots or houses that are set well back from the property line. Plows throwing one way only may be used to advantage, however, in more closely built up sections, and a movable wing may be used to avoid poles and trees. Narrow plows are in common use for cleaning gutters, both in suburban and in well built up sections.

More recently it has become apparent that plows can be used as labor savers in downtown streets, where it is customary to clear the street entirely of snow. In New York it is estimated that one plow is as effective as twenty-five laborers in gathering

the snow in winrows, from which it may be easily thrown up into piles which cause comparatively little obstruction to traffic, to be removed later. When the weather indications after a storm are for warm weather or rain, the plows are used to throw the snow away from the curb, leaving the gutter clear. As the snow melts the water runs away instead of remaining in pools to be frozen at night and thus continue an obstruction to traffic for days or weeks. The mere clearing of the gutter with a narrow plow is a great help in this respect.

In considering different types of plows it is to be understood that each may have an advantage under certain circumstances and methods of work. Whether the snow is deep or shallow, wet or dry, should be considered, as well as the question whether it is best to facilitate the melting of the snow, or to pile it up (in which condition melting is retarded) with a view to hauling it away in the immediate future.

For convenience in description plows may be divided into

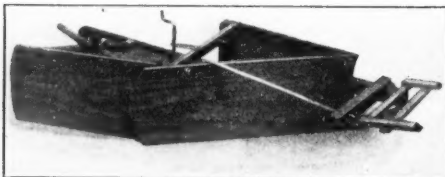
those which throw the snow both ways and those delivering one way. Of the plows delivering one way there are those without wheels, those having two wheels and those having four wheels. Those having four wheels comprise the largest class. They differ in height of wheels and height of frame, the high frame passing over the snow without encountering any obstruction and the low frame allowing more direct draft on the scraper. Devices for regulating the height and angle of the scraper differ, hand-wheels being used in some cases and levers in others. Some plows do and some do not have any device for quickly reversing the direction of the throw. Machines differ greatly in weight, the heavy ones having the advantage of holding the scraper down to its work, the weight in itself, however, adding to the tractive force required. A light weight scraper, if well designed, has a compactness which adapts it to certain kinds of work, as piling up snow.



THE MOORE.
V-SHAPED PLOWS.

The Moore plow, made by the Moore Specialty Manufacturing Company, is a V-shaped plow with concave moldboards made of steel and molded to secure the best results for rolling the snow away. The plow is braced and strengthened with steel and all points are made of malleable iron. The concave construction is designed to prevent clogging, so that the plow will remain flush with the surface without extra weight. The moldboards are carried by a frame on runners and by means of levers they can be lifted up, a convenience in crossing gutters and in transportation to the scene of operations. The same company makes a special plow in which, by means of a set screw, the moldboard can be spread so as to make the plow cover a greater or less width. The company also makes a gutter plow 24 inches in width.

The Wheeler plow, made by the Acme Road Machinery Company, is also a V-shaped plow, but it has an adjustable wing which gives it a variable range of action. The wing can be thrown in or out in passing trees without stopping the horse and releasing a foot-lever will drop it back into place again. The lever that shows in the illustration at the back adjusts the height of the cut or raises the moldboard up so that it can go over rough walks or curbstones. On this season's pattern the manufacturer is using a ratchet crank. The width with wing closed is 3 feet 3 inches. With wing thrown out it is 5 feet 3 inches.



THE WHEELER

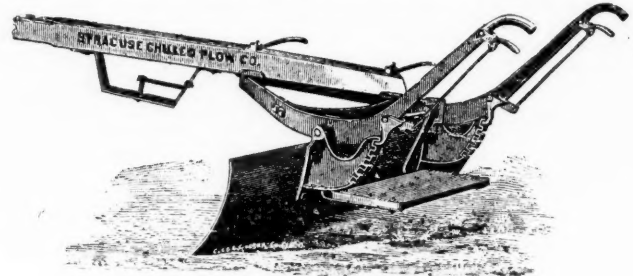
leasing a foot-lever will drop it back into place again. The lever that shows in the illustration at the back adjusts the height of the cut or raises the moldboard up so that it can go over rough walks or curbstones. On this season's pattern the manufacturer is using a ratchet crank. The width with wing closed is 3 feet 3 inches. With wing thrown out it is 5 feet 3 inches.

PLOWS DELIVERING ONE WAY WITHOUT WHEELS.

The Syracuse road scraper, made by the Syracuse Chilled Plow Company, is a very simple and substantial scraper for use in removing snow from sidewalks, but it is also used to

good advantage in cleaning the snow out of gutters. It is adjustable for pitch and angle. The small lever beneath the handles changes the pitch. The blade is 5 feet long and 17 inches wide; the weight is 280 pounds.

The Doan scraper, made by the Sidney Steel Scraper Company, has a flat cutting surface and the blade is not curved at

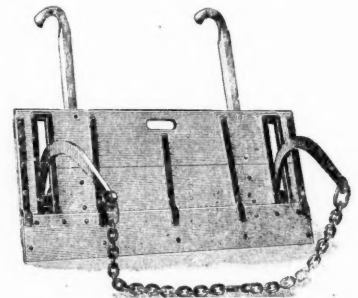


THE SYRACUSE SCRAPER

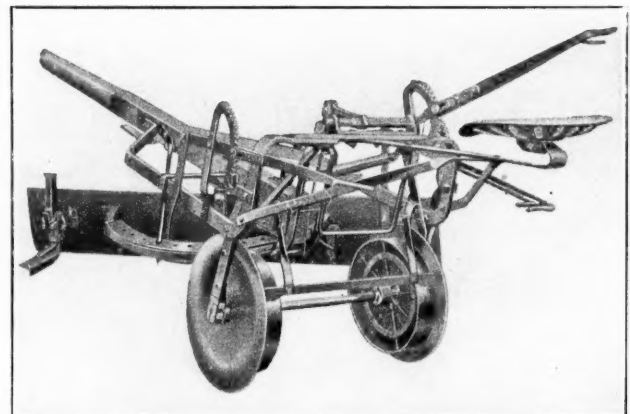
all. It is intended to move snow forward a considerable distance rather than throw it aside. It is suitable for use in driveways and alleys and in piling up snow. The cutting edge is 4 feet long. The pitch is adjustable.

PLOWS DELIVERING ONE WAY WITH TWO WHEELS.

The Twentieth Century snow plow, made by the Baker Manufacturing Company, has two wheels, flanged to prevent side-slipping. Made of steel, its weight of about 600 pounds tends to hold it down to its work, and the moldboard with proper curvature gets under the snow and removes it instead of slid-



THE DOAN SCRAPER



THE TWENTIETH CENTURY

ing over it, as a lighter machine might do. The blade can be reversed quickly so as to throw either to the right or left. The moldboard is made in 6- and 7-foot lengths and is 13 inches high, and the cutting blade is 5 inches wide. Rollers are bolted to each end to protect the curb from damage. In this machine all working parts are closely grouped; blades, levers and wheels work at the end of the tongue, balanced over the axle within a circle of 56 inches. The blade is attached to a reversible circle consisting of a solid steel bar $1\frac{1}{4}$ inches square in section. This is attached to the moldboard by countersunk bolts with square heads, so that each bolt can be removed. On the top of this a large steel plate is riveted containing eleven holes, five on each side of the center. These holes are engaged by a hooked rod which holds the moldboard at any angle. This circle slides in and rests on a heavy hanger or keeper situated near the end of the pole. Through the pole down through the holes into the keeper is dropped a heavy pointed pin with a



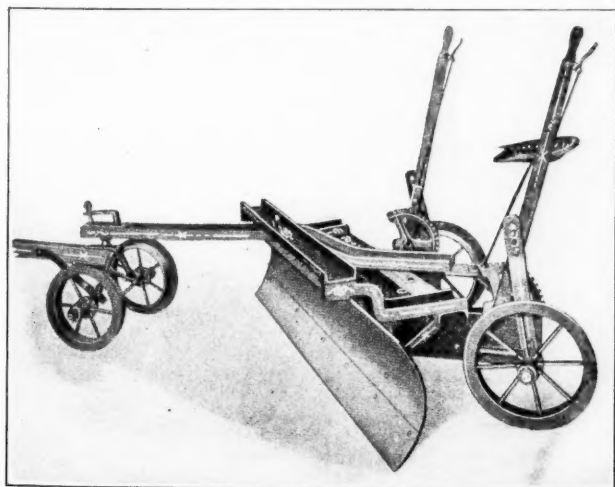
TWO-WHEELED SNOW PLOW

ring handle at the top. The main lever raises and lowers the moldboard to twelve different heights. The flanges on the wheels are removable, so that if there is danger of injuring the pavement they may be taken off.

FOUR-WHEELED ONE-MAN SNOW PLOWS.

Four-wheeled snow plows are conveniently divided into those which may be controlled by one man and those which require two. The first class are lighter than the second, have lower frames as a rule and more direct application of draft. All of the one-man machines shown below are quickly reversible; some of the two-man machines are not. There seems to be a tendency among some manufacturers to substitute flanged shoes in the place of the rear wheels. As this does not constitute any essential change in the type of the machine, and apparently is applicable to any of them, they are still classified as four-wheeled machines. Four-wheeled plows, whether one- or two-man, differ greatly in weight, method of control (whether by wheels or levers), in the height and character of the frame, in directness of draft, in compactness, size and shape of the scraper and in many minor details. Side-slipping is a problem which has to be met in all these machines. Weight, compactness, shape of wheels and method of attachment, and perhaps more than anything else the balance of the machine (that is, the points at which the thrust is applied and resisted) are the controlling factors.

The Simplex, made by the Russell Grader Manufacturing Company, is all steel and weighs about 800 pounds. It has long hubs with removable boxes and powerful lever lifts which control the blade quickly. The blade is 7 feet 2 inches long, which, it is claimed, enables it to cut a furrow of a certain width

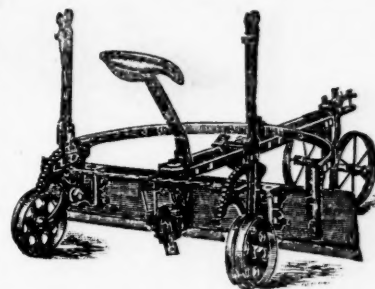


THE SIMPLEX

more easily than a short blade because it works at a greater angle. The cutting edge is detachable. An automatic adjustment keeps the rear wheels parallel with the line of draft. One

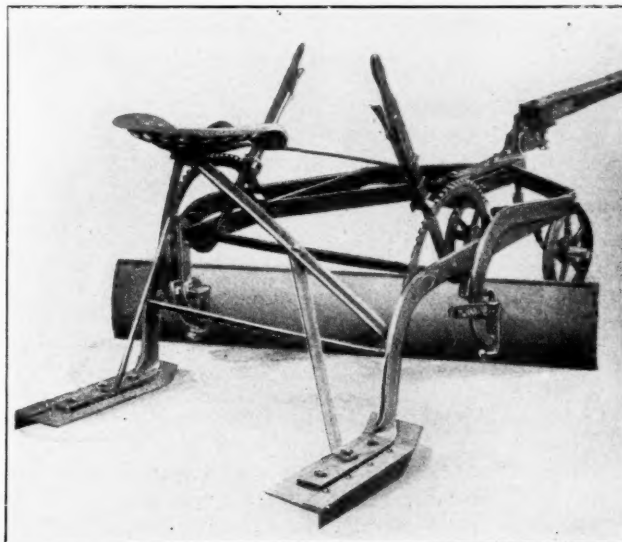
link keeps the wheels traveling parallel and the other link holds them both in line with the draw bar, no matter at what angle the blade is placed. The wheels are flanged. The front wheels are 15 inches and the rear wheels 18 inches in diameter. The draft bar is pivoted on the rear part of the frame, which is about 12 inches back of the blade. The purpose of this is to bring the draft bar near the forward end of the blade, which is subject to the greatest strain and thus is given the most rigid support. The draft is directly at the drawbar or reach, close to the blade.

The Panama Junior, made by the F. B. Zieg Manufacturing Company, is in its main outlines somewhat similar to the Simplex. Both resemble the sulky plow. The frame construction and the method of holding the blade are different, the blade being hung from a semi-circular band crossing the beam well forward. The blade is detachable. The wheels have a projecting ridge in the middle of the tire instead of a flange.



THE PANAMA JUNIOR

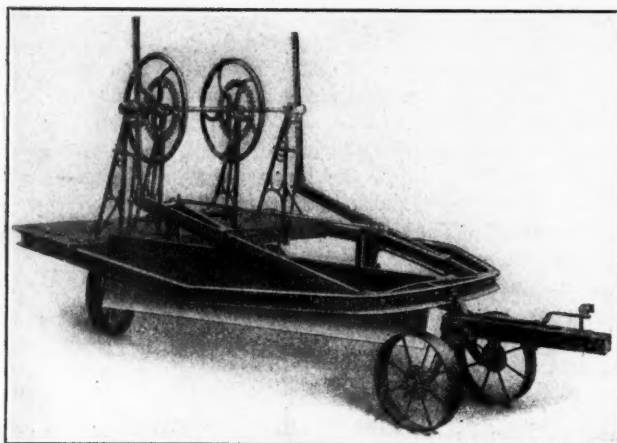
The Glide, made by the Glide Road Machine Company, is distinctly of the four-wheeled one-man type, although in the new model shown in the illustration flanged runners or shoes are substituted for rear wheels. As in the case of the two



THE GLIDE

plows previously described, the driver sits in a seat at the rear with a control lever on each side. The frame is higher, two feet from the ground giving a greater range of elevation of the blade. The tongue truck removes all neck weight and prevents the poles from pounding the horses. The blade is 5 feet long, ground on both edges and of uniform material. The machine weighs about 600 pounds. The shoes are 6 inches wide and 18 inches long and follow behind the blade in a smoothed path. On the side of each shoe is a 2-inch sharp flange which cuts into the snow and ice and prevents skidding.

The Little Yankee, made by the C. N. Carpenter Supply Company, differs from the plows previously described in the means by which the blade is controlled and in the position of the operator. The driver stands on a platform in the rear, where he has considerable freedom of movement. In front of him are two hand-wheels, each of which controls one end of the blade. The direct cog gear is claimed to give very quick action. The blade itself can be set to throw to right or left, but the method of support is different from the machines previously described. The direct draft feature of this machine is claimed as a merit. The wheels are made small to allow the frame

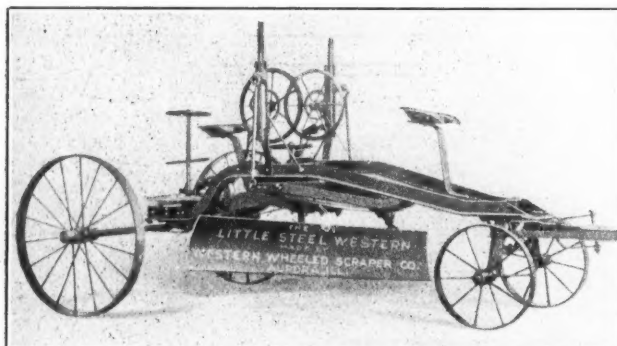


LITTLE YANKEE

to be placed close to the cutting level of the edge of the blade, giving direct draft from tongue to cutting edge. The weight of the machine is 780 pounds; length of blade, 5 feet 6 inches; frame, 3-inch channel steel; rear wheels, 20 inches; front wheels, 16 inches.

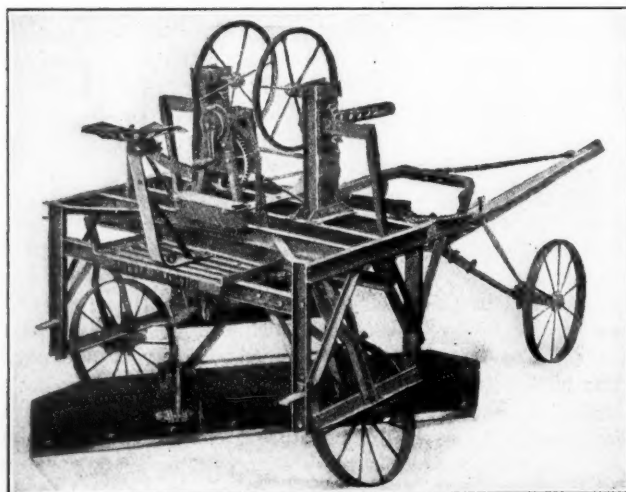
FOUR-WHEELED ONE- OR TWO-MAN PLOWS.

The Little Western Plow, made by the Austin-Western Company, is a light machine so constructed that one man can handle it, but it has seats provided for two men and is strong enough to do heavy work. It weighs 1,400 pounds.



LITTLE WESTERN

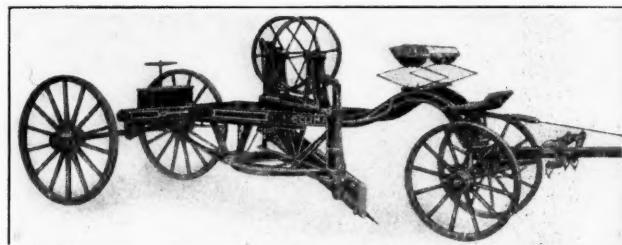
The blade can be worked at any horizontal angle within the circle and it can be tilted at different vertical angles. The blade can be so adjusted as to cut two feet outside of the wheel. The raising rack has a direct lift, the side arms allowing the blade to swing in any position without cramping. The rear axle is pivoted in the center so as to allow the wheels to be set at an angle of 12 degrees in either direction. This helps them to resist the side thrust. The frame of the machine can be shifted on the rear axle a distance of 27 inches. The front wheels cut under the frame so that the machine can be turned



LITTLE ROADSTER

short. The draft on the machine is direct. All adjustments are within easy reach of the operator so that one man can drive and operate the machine. The dimensions are as follows: Weight, 1,400 pounds; blade, 6 feet long, 14 inches wide; rear axle, 6 feet 9 inches long; rear wheels, 40 inches high, 3-inch tire; front axle, 4 feet long; front wheels, 24 inches high, 3-inch tires; front axle, clearance above ground, 17 inches; rear axle, clearance above ground, 20 inches; frame over blade, clearance above ground, 33½ inches; side rails, T-steel, 3½ x 3½ inches; wheel base, 8 feet; length over all, 9½ feet.

The Little Roadster, made by J. D. Adams & Company, is also either a one- or two-man machine. It weighs 1,200 pounds. The rear wheels have a special design permitting them to lean at an angle so as to resist the side thrust. The blade is placed

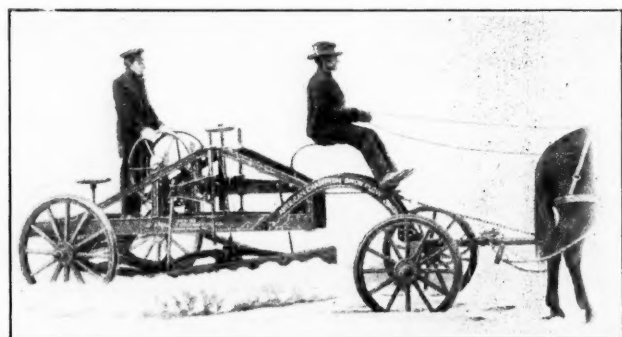


CLIMAX

directly between the two rear wheels. This permits a short coupled construction and saves weight. The raising and lowering of the blade is accomplished by one right- and one left-hand worm and gear which hold the blade in any desired position. The length between the front and rear axles is 5 feet; width of tread, 4 feet 8 inches; length of moldboard, 6½ feet. The machine is all steel.

FOUR-WHEELED, TWO-MAN PLOWS.

The Climax plow, built by the Climax Road Machine Company, is an all-steel machine weighing about 2,500 pounds, equipped either with a concave or an angle blade. It sits low

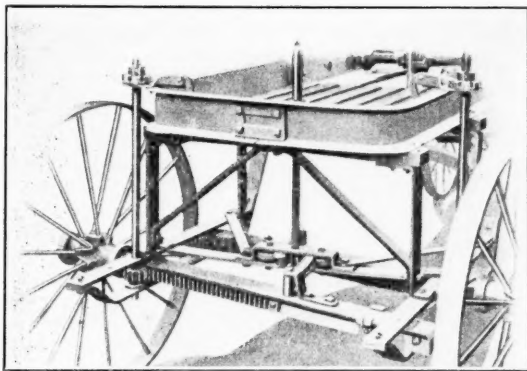


CHAMPION

to the ground and the operator is stationed in the center of the machine with his work constantly in sight. The blade can be raised 16 inches. The back of the blade is braced with angle steel and the ends fitted with chilled sleeve pieces. The cutting edge is detachable. The reversing apparatus consists of an angle iron bent in semi-circular form fastened back of the hangers and connected from end to end by a channel which is attached at the center by a pin to the frame. In this circle are slots allowing the blade to be set at any angle. The reverse is well supported by braces to the back of the machine. The reverse can be most easily handled by the operator using the hand wheels. The hand wheels, in raising and lowering the blade, work from a worm gear attached to the hub shaft in a cog head block. The blade is raised and lowered without lifting the reversing device—a distinctive feature of the machine. The draft is as direct as is possible for this class of machine. The rear axle is laterally adjustable so that the rear wheels may be turned to avoid an obstacle or to change the angle of the blade with reference to the line of draught. The weight of the blade is held in balance by springs.

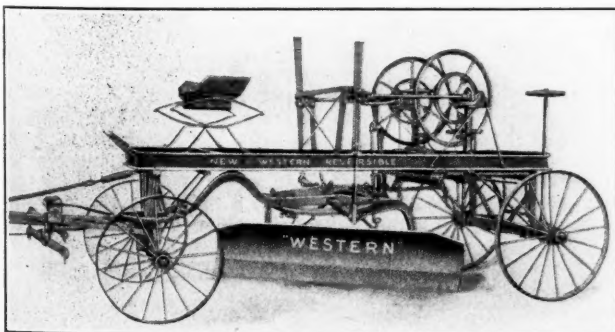
The Champion snow plow, built by the American Road Machine Company, was originally designed for removing snow

from street car tracks, and when used for that purpose has special wheels. The machine, either with or without the extension wing, is adapted for general snow removal purposes. It consists of a steel bar 8 feet in length by 14 inches in width, suspended from a four-wheeled truck. The bar can be set by the operator in any desired position. The upward and downward movement of the bar is controlled by the two iron hand wheels. The machine is compactly built, the frame being trussed like a bridge. Wood, steel and cast iron enter into the construction. The scraping bar is reversed on a heavy steel semi-circle. This circle is reinforced by braces from the rear axle. This method of construction is claimed to be of special advantage in snow cleaning, because the scraper may at any time strike an invisible obstruction and the stiff bracing to the entire rear of the machine saves it from injury. The cutting edge of the scraper is renewable. An improved form of the Champion Reversible is made differing from that described and illustrated principally in the reversing device. This improvement enables the operator to set the scraper bar at any angle easily and quickly by means of a hand-wheel located in a convenient position.

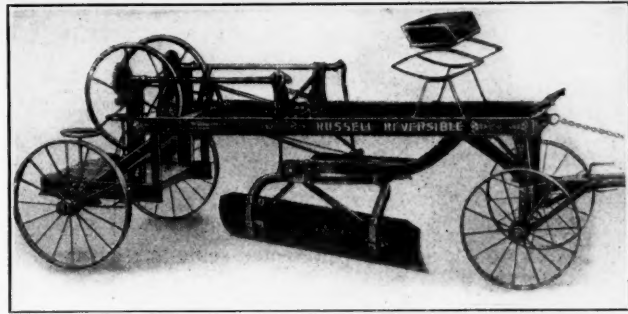


NATIONAL REVERSIBLE

The National Reversible, made by the Indiana Road Machine Company, is apparently a modification of an earlier pattern, manufactured under the name Indiana Reversible. The mechanism used in making adjustments are mainly of the worm and gear type. A combined pivotal and extensible rear axle is a feature of the machine, claimed to be exclusive. Without stopping the machine the operator can swing the axle in either direction. With either or both of the axles extended the machine is given a broad bearing. Another special feature is the side shift. A combination mitre gear and worm gear is used which will force the blade into a pile of snow without stopping the teams. This side shift is self-locking. The mechanism for lifting the blade consists of two large hand wheels, each connected with a worm gear. A heavy tension spring is used in coupling the draw bars to the king bolt to take up shock. The blade is heavily braced. The pitch of the blade is changed by raising or lowering the front draw bar by turning a hand wheel in front of the operator.



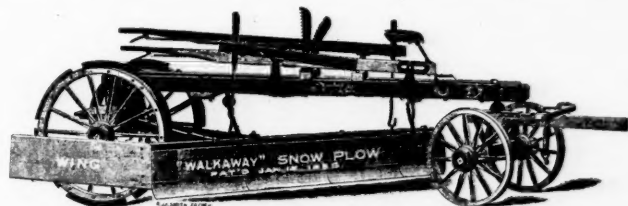
WESTERN REVERSIBLE



RUSSELL REVERSIBLE

The Western Reversible, made by the Austin-Western Company, is a heavy and substantial plow weighing 2,675 pounds, and special machines are made up to a weight of 3,500 pounds. The blade of the standard machine is 7 feet long. The front wheels are 34 inches, the rear wheels 40 inches in diameter. The track of the machine, center to center of wheels, is 48 inches. The rear axle is extensible. The "floating" scraper blade is held firmly enough to cut but will spring a little when striking an obstacle and thus save the horses and the machine. As soon as the wheels are brought back to their proper position the frame returns to its normal shape. It will be seen, in the cut, that the draft is direct and the adjustment of the blade is vertical. The pitch of the blade is controlled by a lever. The height of the machine gives the necessary elevation to the scraper blade, enables the operator to always see his work ahead, and the whole length of the scraper blade, while the extensible axle avoids the danger of upsetting. The adjustments and changes are made by the operator from his place on the machine.

The Russell Reversible, made by the Russell Grader Manufacturing Company, is a heavy, substantial machine weighing 3,000 pounds. The operator stands on a receding platform, where he has an unobstructed view of the scraper and the ground ahead of it. All adjustments are within easy reach. The changes may be made while the machine is in motion. The large pilot wheels for raising and lowering the blade work on worm gears, and they lock wherever dropped. A one-piece axle is used in the rear as well as in front. The rear wheels



WALKAWAY

track 6 feet. The rear axle is extensible on both sides and will travel at any desired angle so as to counteract the side thrust. The blade has a wide range of adjustment as respects height, angle and side extension. It is 7 feet 2 inches long, made of $\frac{3}{8}$ -inch steel. The front wheels are 34 inches high, rear ones, 40 inches, with removable boxes. High grade steel is used in the goose neck and beams to give strength and stiffness. Goose neck irons are 3 by 1 inch; beams 2 inches square. The center shift is claimed to be an especially effective device for extending the blade to either side. A link or pinion in the sliding block locks at every half turn without the use of a latch.

The Walkaway snow plow, made by the Indiana Road Machine Company, was designed for clearing street railway tracks, but is suitable for general purposes. The construction is simple and strong. The blade is pivoted in a ball and socket coupling on the rear axle. The cutting knives are bolted to a plank. In fact, more wood is used in the construction of this machine than in any of the others described. Adjustment of the blade is made by a system of levers, the length of which secures easy operation. The machine is not reversible.

SELECTION AND MAINTENANCE OF PAVEMENTS

Noise, Slipperiness, Sanitariness and Durability as Elements of Choice—When to Relay Asphalt Pavements—Organization of Repair Force in Manhattan—Cost of Repairs in that Borough

UNDER the title "The Street Pavement Problem in the Borough of Manhattan," Mr. George W. Tillson, Chief Engineer of Highways of that borough, presented some interesting facts and ideas before the Municipal Engineers of the City of New York at a recent meeting of that society. Much of this applied largely to local conditions only; but we quote below certain portions which were of value to municipal engineers generally.

CHOICE OF PAVEMENT

First stating that Manhattan has adopted stone block, asphalt block, sheet asphalt and wood block as its standard pavements, he discusses the matter of selecting one of these for a given street, as follows:

For heavy traffic streets where the pavement is in constant use under all weather conditions and where the question of noise is not important, a well-laid granite pavement will be most satisfactory. But suppose, for instance, that such a street passes a hospital and it is necessary to reduce the noise to a minimum, then a change must be made. Under such conditions, where the grade is less than 2 per cent., the author would always recommend wood block. On steeper grades asphalt, sheet or block, to about 5 per cent., when a return must be made to granite. The problem then is to use this material in such a way that it will produce the least possible noise under traffic. It is a well-known fact that American stone pavements are inferior to European more on account of the character and shape of the blocks themselves than the material. If, then, the blocks are so dressed that when laid the surface of the pavement shall be smooth and the joints between the blocks so small that it is practicable to fill them with a bituminous compound, the noise element will be eliminated to as great an extent as possible.

If, on the contrary, the traffic on a street be heavy, the question of noise on its entire length all-important and the grades below 2 per cent., the material to be used is undoubtedly wood block.

On light traffic, business or residential streets, either asphalt or wood can be used according to local wishes within grade limitations. It must be remembered, however, that on streets not in continuous use grade restrictions need not be so strictly adhered to, as on the comparatively few days when smooth pavements are unduly slippery they can be avoided to a great extent. To sum up briefly, then, the principles governing the selection of materials for different streets, one would say, first, for heavy traffic wholesale streets, granite block; second, for heavy traffic streets where noise must be eliminated where possible, wood block, asphalt-block, or improved granite, according to grades; third, for light traffic or residential streets, asphalt or wood, according to local desires.

The above conclusions have been reached by taking into account the effect of using materials that do not contain all the requisites previously stated so as to produce the best results. For instance, granite is durable, fairly smooth when well laid, but so noisy as to prohibit its use on certain streets. Wood block is smooth, durable and almost noiseless, but slippery under certain conditions. Asphalt is smooth, less slippery than wood block and also less durable than either wood block or granite. With well-laid granite there is not much difference in the sanitariness of either of the above kinds.

It has been considered that a smooth pavement should always be laid whenever conditions are such as to permit it.

It will be noticed that up to the present time no mention has been made of the cost of the different kinds of pavement. The reason for this is that the author believes that in the Borough of Manhattan the pavement best adapted to any one street should be used irrespective of its cost.

In deciding specifically upon the material for any particular street the question of cost sometimes comes up and may be an important factor in reaching a decision; then the first cost and frequently that of repairs must be taken into consideration. Interruptions to traffic are very objectionable and should be reduced to a minimum. Streets are in use at all times and under all weather conditions. If a pavement be put in good condition and then weather conditions arise so that it is not possible to make repairs for three months, for instance, and in the meantime it becomes bad and in a general state of disrepair, it can safely be admitted that it has not been constructed of proper material. This last principle is important in making the decision. From all reports it is probable that the pavements of the cities of London and Liverpool are kept in better

condition than those of any other large city. It would be of the greatest importance to know whether this is due to a more intelligent selection of material, better construction, or a more uniform and systematic method of making repairs. It is very likely due to all three, and a study of this would undoubtedly be of great value to American cities.

The damage to pavements is the actual wear and tear of street traffic and by extraneous causes. The first is provided for by repaving certain streets and repairing others. The selection of the streets to be repaved and the material to be used is a work requiring great care, judgment, and a complete knowledge of the requirements of each street. In order to do this intelligently and systematically a traffic census should be taken of all the business streets so that the engineer would have positive and specific instead of general knowledge of the existing conditions. Many claims are made of the needs of certain streets by interested parties which are entirely without foundation, and the engineer often requires positive facts to refute them.

WHEN TO RELAY ASPHALT

An asphalt pavement in bad condition is generally full of holes with the asphalt worn down to the foundation. By patching the holes it can be put in good repair till after a certain time more holes occur and they must again be patched up. The frequency of this work and the cost of same will determine when the pavement should be entirely relaid. The entire expense of maintaining a pavement, no matter how its initial cost has been met, consists of this initial cost, the interest on same, the cost of repairs, and the establishment of a sinking fund that will be sufficient to replace it when it becomes worn out.

Putting this into the form of a formula it will be

$$A + C I + \frac{R}{N} = \text{annual expense,}$$

when N = life of pavement,

C = cost per square yard,

I = rate of interest,

R = total cost of repairs,*

A = sinking fund to be paid each year to equal C at end of N years.

It follows then that an exact account should be kept of the cost of repairing each street each year, as it often happens that a large amount of repairs made one year on some streets will materially reduce the cost in succeeding years; while on others the same amount of work must be done until they are repaved. In other words, the entire history of each street should be accurately kept. Applying the figures previously decided upon to this formula, the annual expense of maintaining an asphalt pavement is twenty-five cents. Consequently when the annual cost of repairs on any particular street reaches this amount the question of its repaving should be carefully considered. This is an average result, but knowing the age of a particular pavement and its repair cost, by the application of the formula it can be determined positively whether, from a financial standpoint, it should be repaved or not. This would seem to demonstrate not only that it can be accurately and scientifically determined when an asphalt pavement should be relaid, but that this is difficult to determine in any other way. Where a city charter requires that repaving shall be paid by special assessment and repairs out of the budget account, this determination is important.

DAMAGE FROM OPENINGS

By damage to pavements by extraneous causes is meant the damage caused by openings made in the pavements by plumbers, corporations and builders. Just what this amounts to no one can tell positively, but after careful consideration the author believes that if a pavement were undisturbed it would last 25 per cent. longer than it does with the treatment it receives in the average American city. In the year 1907, in the Borough of Manhattan, the length of trenches more than 100 ft. long opened for all purposes was 120 miles. This was in 437 miles of paved streets. In 1908 and 1909 the amount was less, owing undoubtedly to the financial depression of 1907. But the prospects for 1910 with a better business and the activity of the Department of Water Supply are that it will be a banner year.

It is often said that permits should not be given for opening a new pavement for any purpose. They *should* not, but they often *must* be. Subsurface work is never perfect, and the street must be opened to make repairs. Conditions change:

a twenty-story building has been torn down this season to be replaced by one of thirty-two. The new building will require additional subsurface facilities, and an investment of millions must not be held back on account of damage to a mere pavement. While the Borough of Manhattan is changing as it is to-day, it seems to be impossible to prevent a large number of street openings. The problem is to reduce the number to a minimum.

If the official in charge of the streets could know several years in advance how much money would be available for street work and also had a thorough knowledge of the condition of each street, he would be able to tell one year what streets would be repaved the next. The property owners on the streets affected, the different corporations working underground, as well as all interested city departments should be notified of this determination and that all repairs or new extensions must be made during the current year. If a determination were so made, it would be possible for the Bureau of Highways to prepare all plans and make all contracts for new pavements in the winter. The contractors would know in advance what work each would have and could provide for materials more advantageously and in such a way that deliveries of materials could be made more promptly and expeditiously. Where a large amount of work is to be done and a regular system carried out this would be important.

By the adoption of such a plan openings in streets would be reduced to a minimum. They would not be prevented. That could never be done with our present system of using our underground street areas, and probably never will until Manhattan ceases to grow and becomes peaceful and quiet like a country village.

ASPHALT REPAIR METHODS IN MANHATTAN.

This work consists of keeping in repair all of the asphalt paved streets, sheet and block, both under and out of guarantee, a total, as has been previously stated, of 305 miles.

The out-of-guarantee, or maintenance streets, as they are called, are repaired by contract and paid for per square yard of pavement laid.

In order to facilitate the entire work the borough is divided into six inspection districts. These sections are divided into divisions, generally six, each division being in charge of an inspector and each section being in charge of a chief inspector. The division inspectors report to the chief inspector, who in turn reports to the assistant engineer in charge.

The division inspectors patrol their divisions daily, making notes of all defects in the pavement from whatever cause, whether by wear and tear, fire, plumbers, corporations, water department or builders. These are all located and recorded on a prepared blank which is forwarded to the main office. The clerk in charge of this branch sends to each contractor a copy of the list when the same refers to a guaranteed pavement. The maintenance streets are looked after directly by the engineer in charge.

In addition to the above, on Friday of each week the chief inspectors report to the engineer all streets in their respective districts that are in disrepair. These lists are also sent to the contractors and each one is expected to repair all the streets on his list before the end of that week. This plan has been in effect for about three years and has produced admirable results. The author believes it is impossible to keep the streets in good condition without a competent and systematic inspection.

In compiling statistics of the repairs to asphalt pavements in different cities the unit has generally been the cost per square yard. This, while somewhat satisfactory, is not entirely so, as the cost of doing the same work varies considerably. If, however, the percentage of the maintained pavement actually removed be given, an exact comparison can be made. The following figures have been made up by both plans and relate to the repairs of sheet asphalt pavements out of guarantee in the Borough of Manhattan during the last five years, the figures for 1910 being estimated:

	Percentage of pavement removed.	Cost per square yard, in cents.	Cost per sq. yd. actually repaired.
1906.....	23	34	\$1.48
1907.....	18	20	1.11
1908.....	15	17.7	1.18
1909.....	12	11.7	.98
1910.....	13	11.3	.87

It would seem from the above figures that the limit of the reduction had about been reached.

It seems impossible to obtain reliable figures as to the cost of keeping streets in repair. The amount of money spent in the different cities for such purpose can be learned, but that is a different proposition, as probably no American city spends enough to keep its streets in good condition. In speaking of this an official of a neighboring city said to the author: "We spend all the money we can get, but it is not enough for our purpose." It will be seen, then, of what little value such information is.

LIABILITY FOR FIRE DEPARTMENT

Cities in All Cases, Except Before Admiralty Courts, Held
Not Liable for Acts of Firemen When in Service
—Not Servants, But Officers

By JOHN SIMPSON

ON the ground that the members of the fire department of a city are not its servants, but rather officers of a municipal corporation acting in a governmental capacity, courts have always held that municipal corporations are not liable in damages to third parties for injuries to person or property caused by the negligence of firemen acting within the scope of their duties.

The question of liability has naturally come up most frequently in regard to injuries sustained through alleged reckless driving of fire engines and hose carts while proceeding to extinguish fires.

In an action for damages caused to a horse and buggy by the negligence of the members of the paid Fire Department of San Francisco, in running the steam fire engine against the horse and buggy while going to a fire, it was held, first, that at common law, and in the absence of statutory provisions, the city, as being a municipal corporation, would not be liable for the negligence complained of, and second, that the provisions of the statute under which the fire department of the city and county of San Francisco is organized and controlled do not create a liability upon the part of the city for acts of negligence committed by the officers or men of the department.—Howard vs. San Francisco, 51 Cal., 52.

In the leading case of Jewitt vs. New Haven, 38 Conn., 368, it appeared that the municipal corporation was empowered by its charter to provide for the preservation of the city from damage and exposure to danger from fire, and to establish and regulate a fire department. The action was for damages for injuries sustained by the plaintiff, while driving his horses and carriage on the highway, by being run into by a horse attached to a hose cart, owing to the negligence of its driver. It was held that the charter imposed a public duty for the public welfare, and that the fire department established under its provisions when engaged in extinguishing fires was performing a public governmental act, so that its members were not such servants of the city as to make it liable on the principle of *respondet superior*. Two judges dissented, being of opinion that the statute gave a privilege and power, but imposed no governmental duty such as to give the city immunity for the negligence of its officers.

The Illinois supreme court places the city's exemption from liability on another ground in addition to that of governmental duty expressly imposed by the State. It is of opinion that the exemption may rest on public policy, thus extending the rule to cases where there is no positive requirement of the law, but a mere voluntary exercise of the power given by the statute.

In a Maine case, Burrill vs. Augusta, 78 Me., 118, where damages were sought for injuries sustained by the running away of the plaintiff's horse owing to freight at the noise of steam escaping from a fire engine, the court held that the city was not liable, there being no express statute imposing liability, and the act out of which the claim grew not having been directly and expressly ordered by the city. In another case recovery was desired for personal injuries caused by the running away of a horse frightened by the alleged negligent ringing of a bell on fire apparatus.—Saunders vs. Ft. Madison, 111 Iowa, 102.

Where a person was knocked down and run over by a fire engine which was running upon the sidewalk in violation of a city ordinance the city was held not liable.—Greenwood vs. Louisville, 13 Bush (Ky.), 226. Other cases are: Hafford vs. New Bedford, 16 Gray (Mass.), 297; McKenna vs. St. Louis, 6 Mo., App. 320; Grube vs. St. Paul, 34 Minn., 402; Freeman vs. Philadelphia, 13 Phila. (Pa.), 154; Knight vs. Philadelphia, 15 W. N. C., 307; Alexander vs. Vicksburg, 68 Miss., 564.

The same rule has been applied to cases where the injuries

were caused by engines and fire trucks which were being driven along the streets for the purpose of practice or exercising the teams.—*Gillespie vs. Lincoln*, 35 Neb., 34; *Thomas vs. Findlay*, 6 Ohio, C. C. 241. And on the principle that parades and practice are necessary to promote the efficacy of a fire department, a city was held not liable for injuries sustained by the driver of a wagon who was thrown off by ropes temporarily stretched across a street during a parade of the fire department.—*Simon vs. Atlanta*, 67 Ga., 618.

A firemen's convention was about to be held in the city of Sherman, Tex. The City Council passed an ordinance directing the fire department to take part in the parade, and made an appropriation for the expenses of its doing so. During the parade a person was run over by a hose cart carelessly driven, and sued the city. It was held not liable, as the Council had no authority to pass the ordinance.—*Blankenship vs. Sherman*, 33 Tex., Civ. App. 507. The Common Council of a city, to celebrate its centennial anniversary, directed the fire department to be in front of the city hall at midnight. While a fireman was driving a hose cart carelessly along the street to the rendezvous the plaintiff was run over and injured. It was held that as the calling out of the hose cart was unauthorized, the city was not liable. The fact that it owned the horses and hose cart was immaterial.—*Smith vs. Rochester*, 76 N. Y., 506. And a municipal corporation was held exempt from liability for the death of a person caused by the fall of a fire tower in a practice drill.—*Frederick vs. Columbus*, 58 Ohio, St. 538.

For damages done to person and property in the actual work of extinguishing fires, such as by the escape of sparks from an engine, the bursting of a fire hose, or by the explosion of a steam fire engine, cities have also been held immune.—*Woolbridge vs. New York*, 49 How, Va., 67; *Fisher vs. Boston*, 104 Mass., 87; *Hayes vs. Oshkosh*, 33 Wis., 314.

In *Aschoff vs. Evansville*, 34 Ind., App. 25, damage was alleged to be done by flooding the plaintiff's cellar with water from the city's water works. One reason alleged was the "refusing and neglecting to shut off the water from running through said broken pipe and plug into said cellar while extinguishing a fire in the vicinity." This was held insufficient, because the city was then in the exercise of a purely governmental power. But another allegation made, that the city had negligently failed to keep its fire plugs and the connecting water pipes in repair, was held to state a cause of action. The pipe was a connection of the hydrant and was a part of the water works system. This was used by the city partly for profit and partly for the extinguishment of fires. Consequently the city would be liable for its negligence in maintaining a defective pipe or hydrant. For a defective hose, that not being part of the water works system, it would not.

In the case of *Torbush vs. Norwich*, 38 Conn., 225, a distinguishing feature was that the fire department of the city was strictly a voluntary association. Each company elected its own members and its own officers. All the action taken by the city was to ratify the doings of the companies, and to accept their services as firemen, through the court of Common Council. Here, in order to extinguish a fire in a neighboring building, the firemen, acting in good faith, forced open the plaintiff's door, carried in their fire hose and from his veranda threw water onto the burning building, damaging the floors, carpets and furniture. A fireman became buried in the ruins of a fallen wall and a main pipe was found to be playing into his face. To relieve him, a fireman cut the hose, which emptied its contents upon the plaintiff's floor doing much damage. The door of the house was left open with no one to guard it and the crowd entered and carried off many articles of property. For none of these things was the city held liable. The court remarked that "it is a familiar maxim that the law knows no wrong without a remedy, but it certainly does know cases of individual hardship, without adequate means of redress." In the Kentucky court a city was held not liable for injury to a stock of goods belonging to a third party, caused by the negligence of its firemen while extinguishing a fire in an adjacent building.

Damages have also been unsuccessfully sought for injuries

received during the testing of apparatus of the fire department. Firemen were testing the capacity of a hydrant, by request of the Mayor, in presence of the Mayor and Council, who were determining the most suitable location for a fire engine house. A stream of water thrown from the hydrant by the firemen caused a horse to take fright and the rider was thrown and injured. The city was held not liable. The Mayor's request for an exhibition of the force of the hydrant was not an order of the city and did not change the duties of the firemen.—*Edgerly vs. Concord*, 62 N. H., 8. And where the Fire Commissioners of the city of New York were engaged in testing a water tower in a public place, with a view to its purchase by the city, it fell and killed a bystander. The city was held not liable.—*Thompson vs. New York*, 20 Jones & S., 427.

Injuries have also been sustained by fire apparatus at the engines houses of the department. A hook and ladder truck was left standing so that one of the ladders projected across the sidewalk in front of an engine house. A passer-by walking along the sidewalk came in contact with and was injured by it. The city was held not liable.—*Dodge vs. Granger*, 17 R. I., 664. In another case a person using the sidewalk was struck and injured by the doors of an engine house which were thrown open suddenly. The doors were provided with springs to facilitate their opening, and it was a question whether the injury was caused by the construction of the doors or the negligent manner of opening them. It was held that if it was due to defective construction the city was liable, but not if from the negligence of a fireman.—*Kies vs. Erie*, 169 Pa. St. 598.

Various cases have occurred of injuries received in what might be called incidental work of the department. A fire hydrant having become frozen, an engineer of the fire department was directed by the Village Trustees to thaw it out. In doing this he used the steam fire engine belonging to the fire department, the expense being borne by the village. The water which was allowed to escape from the hydrant in order to clear it of broken ice, froze in the street. A woman passing fell upon the ice and sustained injuries for which she sued, but the village was held not liable. And a city was held not liable for injuries to a coal dealer's employee, assisting in weighing coal purchased by the city for its fire department, who, while moving a pair of scales, was injured by the negligent interference of a fire employee in charge of the tug to which the coal was to be delivered.—*Manske vs. Milwaukee*, 123 Wis., 172. Nor was a city held liable for the negligence of its fire department in allowing a wire which it had put up to wear out and fall.—*Gaetjens vs. New York*, 116 N. Y., Supp. 759.

Courts of admiralty have not adopted the common law rule in regard to the liability of municipal corporations for the members of their fire departments, and have held cities liable for injuries to property caused by the negligence of fire boats while engaged in extinguishing fires. In *Workman vs. New York*, 179 U. S., 552, the city was held liable for injuries to a vessel by its fireboat while the latter was trying to reach a convenient location to play upon a burning building near the pier at which the vessel was moored. Here the relation of master and servant was held to exist. In *Thompson Nav. Co. vs. Chicago*, 79 Fed., 984, it was held, on the other hand, that under the maritime law the liability rests, not in the relation of master and servant, but in the bare fact of ownership of the vessel which is considered as the offender. In *Henderson vs. Cleveland*, 93 Fed., 844, where a fire tug collided with a moored sailing vessel while trying to reach a standpipe, and the city was held liable in damages, it appeared that there was abundance of time for the tug to have reached the standpipe without any risk to itself or other vessels.

OHIO STATE BOARD OF HEALTH DECISION

ACCORDING to press reports, the Common Pleas Court of Darke County, Ohio, has just published a decision upholding the authority of the State Board of Health to compel municipalities to install water and sewage purification plants under the provisions of the Bense act, the especial case being that of Greenville, which had been ordered to install a sewage disposal plant.

LOCATION OF MONUMENTS

Should be Appropriate, both Architecturally and Sculpturally, to Their Location, and Harmonize with Surroundings—Conspicuousness not Chief Consideration

THE latest report of the Art Commission of the city of New York, which has just been issued, devotes considerable space to expressing its ideas concerning the great desirability of considering carefully the location as well as the design of a monument of any kind which is to be located in a public place; in connection therewith calling attention to several in New York which, by their inappropriate location, either have failed greatly in their possible effectiveness or have even detracted from the landscape.

This Commission has jurisdiction over all works of art acquired by New York City in any way, and over the removal, relocation or alteration of any already in its possession; also over all designs of buildings, bridges, approaches, gates, fences, lamps or other structures erected on land belonging to the city. Its consent is necessary for the purchase or acceptance of any monument and also for the location of the same.



POORLY PLACED BUST OF MCORE

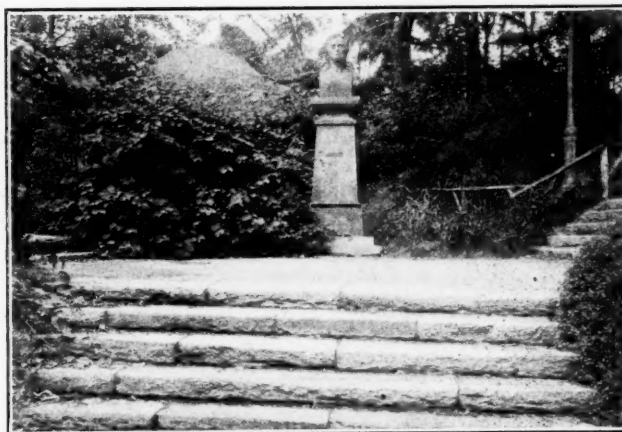
No logical relation to surroundings, but merely an excrecence on a broad lawn

Discussing the subject of location, the Commission says in the report referred to:

These difficulties (the location of monuments) are due chiefly to the fact that in most cases the monument is not designed for a specific site. When completed it is submitted for a definite spot, which, in most instances, is selected not because it suits the character of the monument, but because it is con-

spicuous; as, for instance, at the junction of two or more important streets or in a prominent place in one of the chief squares or parks.

It is self-evident that the character of the monument should determine the nature of its setting. The all-important question in selecting a site is that it should be of a character suited to the monument; but usually, in order to satisfy the desire for a conspicuous place, other considerations are ignored, and, as a consequence, many monuments stand in unsuitable locations. That so many monuments stand in unfortunate locations is due not to carelessness or lack of deliberation, but to the failure to recognize the fact that a *well placed* monument forms an integral part of its surroundings. Because of this failure to appreciate that there should be a distinct relationship between a monument and its immediate neighborhood, many monuments have no relation to the shape or size of the place where they stand nor to their surroundings. Some are in the midst of great whirlpools of traffic with skyscrapers towering above them and huge signboards for a background. One can examine and enjoy them only at the risk of life and limb. Swallowed up and submerged in the turmoil and confusion of these prominent focal points of street traffic, these monuments



WELL-PLACED BUST OF SCHILLER

Part of its surroundings, which are suitable for a poet

to distinguished men appear as forlorn bronze figures stranded on their granite pedestals. Such situations destroy the dignity and beauty of the monuments.

Many monuments consist of massive granite pedestals surmounted by huge bronze busts. In general these have been erected in parks. Many of them stand on beautiful green lawns, conspicuous objects, but without logical relation to their



BADLY PLACED MONUMENT OF LINCOLN

In the midst of congested traffic, with a background which very much lessens its effectiveness



WELL-PLACED STATUE OF FRANZ SIGEL

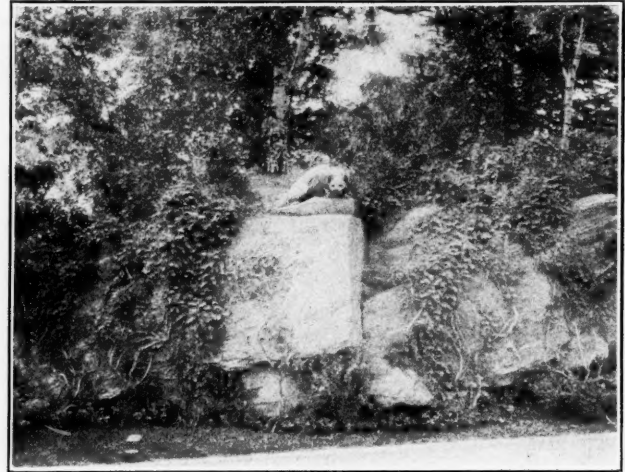
Fits into surroundings and forms a part of them



UNSUITABLY LOCATED MONUMENT OF ALEXANDER HAMILTON
On a broad lawn, with no logical relation to anything in its vicinity

surroundings. Surely it cannot be reasonably claimed that they are ornaments to the parks, or that the green lawns would not be more beautiful without them.

While definite rules cannot be laid down for the location of monuments, any more than rules can with finality be given for the composition of a picture or a group of sculpture, yet certain fundamental principles are very evident. A monument should be so placed that it is in proper relation both



"THE STILL HUNT"
An ideal location for this particular figure

architecturally and sculpturally to the spot in which it is located, be it street, square or park; that its commemorative or particular character is in harmony with its surroundings and that it is and will remain a distinct ornament to the location in which it stands. The probable permanence of appropriate surroundings should also be considered, for changes in the character and occupancy of adjacent buildings have frequently turned harmony into discord.

WOOD BLOCK PAVEMENTS

Information from a Number of Cities—Oozing—No More Slippery Than Other Smooth Pavements—
Safe Up to Two and in Some Cases Four Per Cent—Amount of Creosote—Kind of Wood

DATA concerning wood block pavements have been collected recently by the American Society of Municipal Improvements, and a synopsis of the replies is given herewith in tabulated form. The questions asked, and replied to by about fifty engineers, were as follows:

1. How many miles of creosoted wood block pavements are there in your city?
2. Do you deem it wise to lay any wood block on a grade steeper than 2 per cent?
3. Have you had trouble during warm weather from the oozing out of the creosote oil from the blocks? How long has this oozing continued?
4. What measures have you taken to overcome this trouble?
5. Do you experience any trouble from horses falling in wet weather or when the blocks are covered with ice? If so, what do you do to overcome the trouble?
6. Do you think 20 pounds of creosote oil per cubic foot of block too much or too little for proper treatment of the wood?
7. What is your favorite wood for wood paving blocks?
8. Do you advise sand cushion? What kind of filler do you advise?

The answers to these questions are given in the columns of the accompanying table bearing the corresponding numbers. Practically all of the replies were from city engineers, and in a number of cases—perhaps the majority—replies as to choice of material or method of laying were really only statements as to the method employed in the city in question.

An inspection of the table shows the following data and opinions:

Of the thirty-three replies, twelve stated that they would not deem it wise to lay wood block on a grade steeper than 2 per cent, and one set 1 per cent as the maximum; while two others would not increase the grade above 2 per cent unless the blocks were grooved. In three cities, grades of $2\frac{1}{2}$ per cent are used; in seven cities, 3 per cent; in one city, $3\frac{1}{2}$, and in another, 3.8 per cent; in two cities 4 per cent is found satisfactory and in one city $4\frac{1}{2}$ per cent.

Concerning oozing, ten had some trouble with this for the first season, while three found it to last into the second season.

Thirteen experienced no trouble from this cause; while seven reported a certain amount of oozing without giving details. The almost universal treatment was to sprinkle sand. In two cities, however, the oil has been scraped off the pavement, heated shovels being used in one city.

Twelve did not find these pavements objectionably slippery; while one found them no more slippery than asphalt, and another not so slippery. Several referred to the fact that slipperiness could be largely prevented by keeping the pavement clean and dry. Sand was used in most cities to overcome the slipperiness, with cinders as a substitute in one city and ashes in another.

Concerning the amount of creosote used per cubic foot, most reported 20 pounds as being used, which seemed satisfactory in the majority of cases, although three found this amount too much, and a fourth too much except for lightly traveled streets. Six considered 16 pounds enough, and three, 18 pounds; while seven would vary the amount with the nature of the traffic or other conditions.

Twenty-three use or prefer yellow pine; long leaf in the majority of cases, although several consider short leaf to be as good or probably as good. Tamarack is the first choice of three, Norway or Northern pine of two, and black gum of another. Black gum has also been used by or is a second choice of two others, tamarack of two, and Norway pine of two.

Concerning cushion and filler, twenty-two use or recommend sand cushion, and four a cushion of sand and cement mixed. Four set the blocks on a mortar bed. Two use no cushion, but probably use the mortar bed, although this is not stated. Concerning the filler, ten use the sand filler; five use a filler of cement and sand grout; and sixteen use a bituminous filler, variously described as "asphaltic," "pitch," "tar" or "bituminous." One reports using no filler.

A number of the replies contained statements and opinions too lengthy to be included in the table. Among these the most important are quoted or abstracted below.

WOOD BLOCK PAVEMENTS

Data and Opinions Collected by American Society of Municipal Improvements.

	1 No. of Miles in City	2 Grade Steeper than 2%	3 Oozing from Blocks	4 Measures for Over- coming Oozing	5 Pavement Slippery How Prevented	6 Amount of Cressote Per Cu. Ft.	7 What Wood Preferred	8 Cushion and Filler
Boston, Mass.	1.79	No.	For one year.	Sprinkle sand.	Somewhat. Cleaning and sand.	Some satisfactory with 16, 20 used now.	Short leaf pine. Also long leaf.	Sand cushion. Asphaltic fillers give good results.
New Haven, Conn.	1 1/2	No.	Large part of the season.	Sprinkle sand.	Yes. Use sand.	20 lbs. about right.	Pine.	Sand cushion. Sand filler.
New York City.	13	No.	A few months with 20 lbs.	Sanding on hot days.	Cleaning and keeping dry.	20 lbs. about right.	Long leaf yellow pine.	Sand cushion. Filler of fine, dry, sharp sand.
Manhattan					Sand in icy weather.			
Bronx.	3.397	No.	For some months under light traffic.	Sanding in some cases.	Some difficulty. Sand used sometimes.	20 lbs. for hard pine. More for black gum.	Southern hard pine. Black gum has been used.	1/2 inch mortar bed. Bituminous filler.
Richmond	0.82	No.	No trouble.	.....	Practically no trouble.	20 lbs. for long leaf pine.	Long leaf pine. Will try short leaf.	Sand cushion. Sand filler.
Niagara Falls, N. Y.	Four bridge floors.	4%. No complaint.	June and July for 2 seasons.	Sanding and sprinkling with water at mid-day.	Sanding. No.	Not less than 20.	Used only yellow pine.	Used only cement filler. Generous expansion joint necessary.
Poughkeepsie, N. Y.		Yes.						Mortar bed. Fine sand filler.
Rochester, N. Y.	1/2	Not unless grooved.	No.	.....	Some trouble.	20 lbs.	Long leaf southern pine.	Cushion. 3 sand, 1 cement
Hoboken, N. J.		No trouble with 4 1/2%.	First summer.	Scraped it off. Wears away in time.	.....	20 lbs. quite sufficient.	Short leaf pine.	Cushion. 3 sand, 1 cement
Newark, N. J.	0.47	3% for some traffic.	Two years.	Sanding.	Keep clean in wet weather. Sand for ice and when oozing.	20 lbs. for long leaf yellow pine.	Long leaf yellow pine.	Cushion. 3 sand, 1 cement. Filler hot, sharp sand.
Paterson, N. J.	1	No.	Yes.	.....	Yes. Sand.	20 lbs. not too much.	Long leaf pine.	Sand cushion. Sand filler.
Erie, Pa.	300 ft.	2 1/2% all right.	No.	.....	Very slippery. Spread sand.	20 lbs. sufficient.	Long leaf yellow pine.	Sand cushion. Sand filler.
Philadelphia, Pa.	1 1/2	Absolutely no.	Great trouble for 2 mos. from.	Sprinkle with fine sand or loam.	Chuders or sand.	20 lbs. 4. Ample. Find 23	Long leaf yellow pine.	Sand cushion. No filler.
Pittsburg, Pa.	1.05	2 1/2% Max. in Pitts.	Not serious. Lasted 4 weeks.	Sand, sprinkled to prevent dust.	Not so slippery as asphalt.	16 for business, 20 for light traffic.	Long leaf yellow pine. tamarack. Norway pine, black gum.	Sand cushion. Cement grout or sand filler.
Baltimore, Md.		No.	Yes.	.....	Yes. Spread ashes.	20 lbs. too much.	Georgia pine.	Sand and cement cushion. Cement grout filler.
Atlanta, Ga.	3	4% satisfactory.	First 2 or 3 mos. of hot weather.	Sprinkling sand.	Not so slippery as asphalt. Sprinkle sand.	18 to 20 lbs.	Long leaf yellow pine.	Soft mortar bed or sand cushion. Bituminous filler.
Pensacola, Fla.	5 1/2	3 1/2%	Very much.	Thin coat of sand.	No.	20 or 21 lbs. with long leaf yellow pine.	Long leaf pine, at least 85% heart.	Cement and sand cushion. Filler, 1 cement and 2 sand.
Birmingham, Ala.	1 1/2	3% 3%	No.	.....	No.	Less than 20 lbs.	Long leaf yellow pine.	Sand cushion. Pitch filler.
Austin, Tex.	950 ft. Bridge.	3%	No.	.....	No.	.....	.....	Sand cushion. Asphalt filler.
Dallas, Tex.	2	3%	No.	.....	No.	16 lbs.	Long leaf yellow pine.	1 in. sand cushion. Asphalt or pitch filler.
Cincinnati, O.	4.54	3.8% satisfactory.	For two summers.	Sprinkling sand.	Yes. Use sand.	20 lbs.	Long leaf yellow pine.	Sand cushion. Sand filler.
Cleveland, O.	Viaducts.	.....	No.	.....	.....	16 to 20 lbs.	.....	No cushion. Tar filler.
Chicago, Ill.	14	3%	Serious trouble 1st summer.	Remove pitch with heated shovel and use sand.	No.	20 lbs. for lightly traveled street; too much for heavily traveled.	Southern long leaf pine.	Sand cushion. Pitch filler.
Granite City, Ill.	1	No.	Yes.	Scraping.	No.	Less than 18 lbs.	Long leaf yellow pine.	1 in. sand cushion. Tar filler.
Grand Rapids, Mich.	1 1/2	2 1/2%	No; but excess of pitch filler.	None.	Some on 3% grade. Used sand.	16 to 20 lbs.	Norway pine if obtainable.	1 1/2 in. sand cushion. Bituminous filler.
Milwaukee, Wis.	2 1/2	No.	Not with Northern pine.	.....	With Southern pine; not with Northern. Use sand.	16 lbs.	Northern pine, tamarack, Norway pine.	Sand cushion. Tar or asphalt filler.
Little Rock, Ark.	0.25	.....	Yes.	Use sand.	No.	12 to 18 lbs.	Long leaf yellow pine.	Sand cushion. Dry sand filler.
Wagoner, Okla.	1 1/2	1%	Continuous.	.....	Yes. Sprinkle with fine ashes or salt.	16 lbs.	Black gum.	1 in. sand cushion. Pitch or asphalt filler.
Grand Forks, N. D.	5.35	2%	No	.....	When wet or icy. Use sand.	20 lbs.	Tamarack.	Sand cushion. Pitch filler.
Hamilton, Can.	2	Not unless grooved.	First season.	.....	Little trouble. Use sand.	20 lbs.	Long leaf Georgia pine.	Sand cushion. Grout filler.
Montreal, Can.		3%	No.	.....	Spread sand.	16 lbs. enough.	Tamarack.	1 in. sand cushion. Asphalt filler.
Regina, Sask.	3	3%	No.	.....	Yes, in wet or icy weather; but no more than asphalt. Use sand.	20 lbs. used and blocks heave.	Long leaf yellow pine.	Mortar bed. Bituminous filler.
Toronto, Ont.		No.	Yes.	Sprinkle with sand or granite dust.	No.	16 lbs.	Tamarack, Brit. Columbia fir, Georgia pine.	No cushion. Bituminous filler.

From Boston it was reported: "We have had some trouble with horses falling on our wood block, but not a great deal. We have discovered that by keeping our streets clean and not permitting slime, etc., to remain for any length of time, a big difference is made in the slipperiness of the street. When the blocks are covered with ice, of course, you have the same difficulty that you have with any permanent pavement when so covered. We have found that sand, when properly applied, eliminates the slippery condition a great deal." From Pittsburg comes the reply to the same question: "We have no serious trouble from horses falling in wet weather due to the slipperiness of the wood block pavements. More complaints are received from this cause on asphalt pavements than on wood block. The cause of the trouble is relieved by the application comes the reply to the same question: "We have no serious is not so slippery in wet weather as asphalt. All smooth pavements are more or less dangerous when covered with thin films of ice. We cannot say that wood blocks are more so than any other smooth pavements." In Grand Rapids, Mich., some trouble with slipperiness in frosty weather has been experienced on a bridge approach with a grade of 3 per cent. It is reported that in Regina, Sask., the blocks afford a poor footing in wet weather and very poor when covered with ice, but are no worse than asphalt or bitulithic pavements in this regard.

An engineer with experience on wood block pavements in Florida writes: "The grade upon which wood block can be laid with safety to horses depends, I think, principally upon climatic conditions. In the South, where there is no ice or snow to make the pavements slippery, wood blocks can be laid with safety on a grade of $3\frac{1}{2}$ per cent. Of course, this assumes the cleaning of the streets daily. In the North, where ice and sleet is probable and where melting snow increases the slipperiness of any pavement, I would not want to lay the wood block on a steeper grade than 2 per cent, unless it was covered daily with gravel or sand as is done in the streets of London." Several of the Canadian cities report the use of blocks with grooves at right angles to the axis of the street, especially when the grade exceeds 3 per cent. A consulting paving engineer of New York City considers that "Under usual conditions it is not advisable to lay blocks on a steeper grade than 2 per cent. If, however, the street had heavy traffic and the city would use proper means of cleaning it, 3 or 4 per cent would not be objectionable."

Concerning the oozing or "bleeding" of the blocks it is seen from the table that most cities find more or less of this to occur during the warm months of the first season after laying. A consulting paving engineer of New York writes that the city of Norfolk last year laid a pavement with black gum containing an average of about 24 pounds of oil per cubic foot. This pavement oozed very badly for the first part of the year, but during the latter part the trouble appeared to stop. During the first oozing the pavement was sprinkled with sand, and after this sand had become saturated it was scraped off. In some cases as many as three applications of sand were necessary. Sawdust was tried to absorb the excess of oil, but was disappointing in its effect, as it did not readily absorb the oil and the wind blew it around the street considerably. A solution of hydrate of lime was applied to the surface of the pavement, but this did not appear to stop the oozing to any extent; although the same material tried in New York is believed by some to have prevented oozing there. The writer, however, did not see any reason why it should have any beneficial effect. In 1910 Norfolk laid pine blocks under the specification that they contain between 19 and 21 pounds of oil. These blocks did not ooze in the slightest and so far have given very good satisfaction in every way. The experience of Norfolk is cited especially because its climate is one most favorable to the causing of oozing. This engineer considers that the oozing of oil from blocks depends not alone on the quantity of oil but also on its character. He states that "The city of Cincinnati at the present time is using a heavy distillate oil not exceeding 20 pounds to the cubic foot and these blocks ooze very badly, even

in cold weather, and have continued to do so for the entire season. In the city of Toledo, O., a great deal of trouble has been experienced with blocks oozing, sometimes as long as four years after laying; the oil used there being believed to be a mixture of creosote and water gas tar. On Market street, Philadelphia, the blocks were treated with an average of 24 pounds per cubic foot and oozed badly for the first three months of the summer of 1910, but by the latter part of July the oozing had practically ceased." He calls attention to the fact that in many cases cities reporting the use of 20 pounds to the cubic foot have really laid blocks containing more than this, because of the additional requirement in the specifications of an absorption test which makes necessary the use of more than 20 pounds.

A representative of one of the leading wood block manufacturers writes as follows: "The reason for the oozing of the creosote oil from the blocks is one that is hard to determine, and why some blocks bleed and others do not is somewhat of a mystery. Seventy-five per cent of all the pavement that we have laid has not oozed in any way. From my personal experience, blocks that have just been treated and placed in the street practically as they come from the works do not seem to bleed. If they are allowed to lie around for a month or more they seem to bleed when laid in the street. My opinion is that there is a slight expansion in the block if they have had an opportunity to dry out, and this forces the oil from the block; in addition to the fact that creosote oil expands 10 per cent in volume between a difference in temperature of 60 to 120 degrees F. We laid several streets in Norfolk, Va., last year and they bled quite freely. We have laid two there this year and they have not bled at all. The two laid this year were kept wet from the time they were laid up to cold weather. We have never seen any blocks which have oozed after having been in the street for a year."

In Pittsburg, Pa., oozing has not been serious enough to cause a nuisance and has been remedied by a substantial application of sand, which was kept sprinkled with water to prevent dust. After a short time the sand was scraped off and the street thoroughly cleaned and no further trouble resulted. This trouble was experienced in only one street and this for only about four weeks.

As to quantity of oil used for treating blocks, an engineer writing from Pittsburg gives it as his opinion that 16 pounds of creosote oil is sufficient where the pavement is laid on streets subjected to heavy traffic; but where laid on residence streets where the traffic is light he believes that 20 pounds should be used. The reason for the distinction is that in the case of a heavy traffic street the pavement will wear out before it rots out, while on a light traffic street the question is one of durability against rot rather than against wear. Another engineer writes as follows: "The question of the amount of creosote oil to be put into wood block depends entirely upon the character of the wood which you are treating. Some woods cannot possibly take as much oil as others unless the wood is overcooked, which is dangerous to the life of the wood. In treating long leaf yellow pine with 85 per cent heart, I have no difficulty in getting 21 pounds of oil to the cubic foot, but where this amount of oil was exceeded to any extent the exudation during hot weather is abnormal and becomes a nuisance. Where there is less than 20 or 21 pounds I have already seen brooming of the surface blocks."

Concerning the kind of wood preferred, most of those replying express a preference for long leaf yellow pine as the best. However, there are several exceptions. A Boston engineer reports that they have used both long and short leaf yellow pine, and "Like the short leaf pine, with proper treatment, very much." Several report tamarack as first or second choice.

A dealer writes: "In England it is not the intention, even to-day, in creosoting pitch pine (long leaf yellow pine) to attempt to force the preserving oil into the center of the block, the claim being that the resin in the wood is in itself a great preservative; and further, that the preserving oil closes the pores of the wood, seals the surface from moisture and pre-

vents fungi from entering the center of the block. Long leaf yellow pine also contains more wood oil than other available woods, and it would therefore seem practical that long leaf yellow pine would insure as great preservation with light treatment with creosote as would other woods which contain less natural oil, if given heavier treatment, if the pores of the wood were thoroughly closed to prevent moisture and fungi from entering the block."

Concerning the use of a sand cushion, it appears that most of the cities have used this, although a number have adopted the plan which is, we believe, universally employed in England, of bedding the blocks on a mortar bed laid directly on the concrete foundation. An engineer writes from Atlanta, Ga.: "We have obtained best results with soft mortar beds. We have tried sand and cement mixed dry and then lightly sprinkled sand cushion, and soft mortar bed just stiff enough to hold up the blocks." The present city specifications call for a sand cushion. A sand filler is also used in the same city, although blocks laid with a bituminous filler show no signs of wear after four years of service, and the surface is absolutely regular as when completed. On the same points another engineer writes at length as follows: "We do not advise sand cushion for two reasons; one is that the sand will hold the moisture, which may get into it from the joints through the block and which keeps the lower part of the block partially saturated; whereas if the cushion is made of cement and sand mixed fairly dry, when laid it takes up the inequalities of the surface of the concrete foundation; and when the grouting is placed on the surface of the wood block, the water, passing through the joints, reaches the motor cushion, mixes with it and induces crystallization of the cement, so that the blocks are imbedded in a mortar cushion which becomes practically waterproof. I advise the use of a grout filler of one part cement with two parts of fine sand swept into the joints. As a matter of fact, if the blocks could be properly laid with each block in contact with its neighbor there would be no use of putting any filler in the joints, as very little cement could get into the joints, not enough at any rate to be of advantage. Unfortunately, however, the blocks will not run absolutely uniform in thickness, and therefore joints have to be made in order to get the lines of blocks at right angles to the curbs of the streets, and these joints are sometimes quite wide and require a filler. In addition to the filler alluded to above, I have been using expansion joints, which I find absolutely necessary. Along the curb I have been laying three courses of block paralleled with the curb, the joints between these courses being $\frac{3}{4}$ -inch and filled with tar similar to the brand known as Texico. Every 25 feet and at right angles to the curb a joint $\frac{3}{4}$ -inch wide across the street is filled with this same filler. Where there are street car tracks, longitudinal block is laid along the outside of each rail, and between the block and the web of the rail the space is filled with the tar filler and the surface of the block is kept about $\frac{1}{4}$ -inch below the surface of the rail. Between the two rails the necessary blocks are laid against the rail and the space between the block and the web of the rail is filled with the tar filler, and an expansion joint is staggered from rail to rail about 10 feet between apexes. I believe this method of putting in expansion joints between rails has solved the problem. I have tried all sorts of expansion joints and this is the only one which has proved successful."

In Dallas, Tex., fine sand is placed in the joints, after which asphaltum oil is swept into the joints at the rate of one-half gallon to the square yard, and the pavement is then covered with fine sand. In Cleveland the blocks are laid with tight joints, with expansion joints along the curbs, and given a tar coating at the surface after being laid. In Hamilton, Ont., grout filler is used except at street intersections or where grooved blocks are used, at which points asphalt filler is employed. Regina, Sask., finds that blocks with 12-pound treatment absorb water and heave in the spring before the expansion joints are sufficiently plastic. The engineer believes that considerable of this trouble could be obviated by laying the blocks on a mortar bed. He also favors bituminous cement fillers.

BITUMINOUS ROAD NOMENCLATURE

Continuation of Discussion on this Subject—"Broken Stone"
Instead of Macadam—Bituminous Concrete—Definitions of Bitumen and Asphalt

By CLIFFORD RICHARDSON

THE great interest existing at the present time in the definition of terms descriptive of various forms of bituminous road construction has been manifested by correspondence published in the MUNICIPAL JOURNAL AND ENGINEER, in other journals and in several papers on this form of construction. In view of the fact that a committee of the American Society of Municipal Improvements reported, at a recent meeting, that it was not able to agree as yet upon anything in the way of definitions of this description, it may be worth while to review the subject in its present aspects.

Some misunderstanding seems to have arisen in regard to statements made in a communication to the MUNICIPAL JOURNAL AND ENGINEER under date of June 17, 1910, by the writer, who suggested that the term "bituminous macadam" should be "applied to a construction where stone of one size is used." It was objected that no roads are now constructed with one size stone. In this expression the writer referred to roads where the different courses of broken stone which were coated with bitumen were each of fragments of one size, and not to a road the entire construction of which was with stone of fragments of one size. With this understanding, some of the criticisms of his statement would be done away with.

Another correspondent calls attention to the fact that roads of a type constructed by MacAdam, which were built with one-size stone, have been quite abandoned for some years, and that logically the term "macadam" should not be used in designating the modern type of broken stone road. He suggests that the use of the term "bituminous macadam" be abandoned; but it hardly seems possible that custom will permit of this, at least in a popular sense, although this might well be done by engineers. It would be a desirable move to speak of roads of all types constructed with broken stone as "broken stone roads" or "bituminous broken stone roads." Half a century ago Gillespie wrote of macadam as a "popular name for a broken stone road."

A further difficulty has been met when the use of the word "concrete" is considered. A correspondent of the *Engineering News* of September 22, 1910, considers that the term "bituminous concrete" is particularly fitting for a bitumen-bound broken stone road built by the mixing method. This hardly seems justifiable in view of the actual meaning of the word "concrete." Concrete is defined as (*)

(1) A mass formed by concretion or coalescence of separate particles of matter in one body.

* * * * *

(3) A compacted mass of sand, gravel, coarse pebbles or broken stone cemented together by hydraulic or other mortar, or by asphalt or tar.

In view of these definitions, which seem to clearly express the nature of concrete, any bituminous material to be so called would contain sand or particles of a similar size, suitable for forming a mortar for filling the voids in the coarser materials. With this understanding of the word a bitulithic pavement, when properly constructed, would be a bituminous concrete, but a bituminous broken stone road built by the mixing or penetration method would not, as it would contain no particles, except at the surface, of a size to form a bituminous mortar. With this distinction in view, there is no difficulty in differentiating between bituminous concrete and a bituminous broken stone or a bituminous macadam surface, if the word macadam is still to be used. The use of the word "broken stone" instead of "macadam" would seem preferable. We should then speak more correctly of the bituminous broken stone road, rather than of a bituminous macadam road, no matter whether they are constructed by the penetration or mixing method.

*Robert H. Thurston in Century Dictionary, slightly modified.

In the same way we should speak of bituminous gravel roads where gravel, instead of broken stone, is the material employed. Where the bitumen is merely applied to the surface of a broken stone road, such a road should be referred to as one with a bituminous surface, or as a bituminous-surfaced broken stone road, and not as a bituminous broken stone road. When it is considered important to differentiate the character of the bituminous material the terms "asphalt," "tar," etc., can be substituted for "bitumen" or "bituminous."

In addition to the difficulty of defining the terms which have been under consideration, others have been met in defining such terms as "bitumen," "asphalt" and "tar." Committees of more than one society have had this subject under consideration. A sub-committee of the American Society for Testing Materials proposed, in the summer of 1910, the following definition of bitumen:

"That those hydrocarbon materials used in road building, whether found in nature or resulting from methods of distillation, soluble in carbon bisulphide, and which have heretofore been generally defined as bituminous materials, be hereafter defined as bitumens."

It was unable to agree upon a definition of asphalt. It seems impossible that such a definition of bitumen should be generally accepted, so that no advance has really been made. The word is derived from the Latin, and was used by the naturalist Pliny to denote a material found in nature. Some, at least, believe that the inclusion of industrial by-products under this term is not justified, but those who are endeavoring to dispose of by-products, such as tars, have found it useful in their business to denominate them bitumen, so that it probably will be impossible to prevent the use of the term bitumen as applying to all bituminous material—that is to say, materials which resemble bitumen—at least in the industrial and popular sense. The by-products should be differentiated from native material by being denominated artificial bitumen to denote their origin, under any circumstances.

As long as there are differences of opinion in regard to the definition of such terms, however, good practice would seem to point to the fact that an engineer, in writing in regard to such forms of construction, should premise his remarks by statements as to how he defines them as used in his article, in the same manner that is done in drawing patent specifications where the attorney after using a term defines its meaning as employed thereafter throughout the specifications.

MUNICIPAL FINANCES IN MASSACHUSETTS

Mr. CHARLES F. GETTEMY, Director of the Massachusetts State Bureau of Statistics, read a paper at the recent convention of the National Municipal League descriptive of the work of his department in standardizing municipal accounts and statistics in that State. He explained that while certain other States like Ohio and Indiana have passed laws requiring the installation of uniform accounting systems in all cities and towns, with an accompanying examination or audit of municipal accounts by State examiners, the Massachusetts legislature was unwilling to go to such lengths, in view of the strong traditions of local self-government which causes anything partaking of the nature of State supervision over local affairs to be regarded with considerable jealousy. The Massachusetts legislature, therefore, in legislating upon this subject in 1906 provided merely that the Bureau of Statistics should collect data of municipal finances upon uniform schedules to be made out by local accounting officials, but without any preliminary installation of uniform systems of accounting and without any ostensible supervision or control by the bureau, either over municipal accounts or financial methods.

"To gather and compile, under such circumstances, financial statistics which could be made comparable was," said Mr. Gettemy, "like plunging into a statistical jungle," and he proceeded to describe some of the difficulties encountered by his bureau in compiling statistics under these conditions. The last legislature, however, enacted two laws which, when taken advantage

of by the towns of the commonwealth, will, it is expected, make for material progress in accounting reform. One of these provides for an audit of accounts and installation of the standard system devised by the bureau in cities and towns upon petition for the same, the cost to be assessed back on the municipality; the other law provides for the creation of the office of town accountant, an official for towns whose duties shall be similar to the duties of auditors in cities, and the act prescribes a simple but comprehensive plan for the conduct of town finances, this act being also subject to voluntary adoption by the towns. Another new law, the first of the kind to be put on the statute book of any of the States, requires the registration and certification of all notes issued by towns after January 1 next by the Director of the Bureau of Statistics, in whose office will be kept a record of these transactions for every town in the State.

After emphasizing the necessity of thorough reform in accounting and budget making methods, Mr. Gettemy said:

The functions of the Massachusetts Bureau of Statistics are, as its name implies, primarily statistical, and we do not propose to lose sight of this fact. We have found, indeed, that it is impossible to compile reliable data relating to municipal finances without thorough reform in accounting and budget-making methods; but while bearing in mind that accounting and budgetary reform is essential to and lies at the very foundation of any plan of trustworthy municipal statistics we should not fail to remember that the public as a whole cannot be expected to concern itself greatly with bookkeeping technique. Even excellent accountants are too often unable to see beyond their books and have not the imaginative faculty needed to enable them to select the essential facts for presentation to the public, which wants to know—or ought to want to know—what the sources of municipal revenue are, and how and for what purposes its money is being spent; and this information it cannot get from reports, however accurate, which are little more than mere transcripts of ledgers and cash books accompanied by no effort to arrange and group the figures in such manner as to give them real significance. City and town officials should, therefore, not only know how to keep books and records accurately and systematically, but they ought, also, in order to round out their capacity for usefulness to the people, to possess the qualification of being good reporters. It is only a question of time when municipal officers who are either incompetent or indifferent to their responsibilities will be aroused by the citizens and taxpayers, perhaps rudely, from their slumbers; and that competent, hard-working officials, who themselves have long since seen the necessity for reform in accounting methods, but who have preached it in vain, will find substantial encouragement in an awakened and enlightened public sentiment.

However charitable a view we may wish to take in explanation of conditions which may reflect merely the result of generations of indifference, it is plainly apparent, by all the signs of the times, that the people do not propose to be governed much longer by the spirit of *laissez-faire* in their municipal affairs. Not better accounting methods alone, therefore, but the galvanizing of the bookkeepers' figures into living object lessons that will make for a better and broader civic life—this is the real purpose of the statistics of municipal finances we are collecting and compiling in Massachusetts.

STREET WORK IN COEUR D'ALENE

THE City of Coeur d'Alene, Ida., last spring let contracts for a large amount of street work, and has had the somewhat unusual experience of having the work completed on contract time, before November 1st. This work consisted of 105,946 cubic yards of grading at 36 cts.; 124,776 linear feet of curbing of two grades, at 36 cts. and 50 cts., respectively; 5,713 linear feet of concrete crosswalks at 90 cts.; 4,000 linear feet of corrugated metal drains at 68 cts.; a drainage sewer for the lump sum of \$6,950, and 26,216 square yards of Hassam paving at \$2; the final estimate, including engineer's expenses and interest and discount on bonds, amounting to \$169,997.96.

The curbing was made in two grades, as just stated, one composed of a mixture of 1:3:5 and the other of a mixture of 1:2:4, the former being used on streets where no permanent roadway paving was placed, the latter in what are known as "paving districts." In each case the concrete was spaded back to give a smooth face. For the above information we are indebted to Mr. H. B. Wright, City Engineer.

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DECEMBER 7, 1910

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Census of Street Traffic

WE are publishing this week two articles of unusual value dealing with pavements. In one Mr. Tillson, whose standing as a pavement engineer is well known to our readers, considers the subject of when it is economical to cease repairing an asphalt pavement and relay it—a question which is receiving considerable thought from paving engineers in our larger cities at the present time. He also considers the matter of selecting the kind of pavement best adapted to given conditions, and in this connection calls attention to the desirability of including the amount of traffic to be carried among the conditions upon which such decision is based. It would seem that we have now reached the point where this matter of amount of traffic should be considered and accurate statistics obtained. One of the very important elements of the problem of ultimate

cost of pavement is its durability, and data concerning this should be stated, not in terms of years alone, but in those of traffic carried as well. This, of course, is recognized in a general way when we state that such and such a pavement is the most economical for a residence or side street, but entirely out of the question for a business or heavily traveled street. This, however, is a very indefinite statement, and with the standard pavements for city streets narrowed down as they now are to five or six different classes (if we include all bituminous broken stone or bituminous concrete in one class) it seems desirable to place in more definite shape our information concerning the relative advantages and disadvantages of these standard pavements under various conditions. And, as stated, one of the most important units for measuring the service given by a pavement is the amount of traffic which it carries. This being the case, the amount of traffic to be carried by a proposed pavement should also be one of the conditions considered in deciding upon the kind to be used.

Unfortunately, very few traffic censuses have been taken, and practically no data are available of life of pavement in terms of traffic carried. The American Society of Municipal Improvements in October appointed a committee to collect all of such data which they could find and encourage the taking of traffic censuses by cities at as many points as possible; also to consider the general subject of the forms in which traffic statistics should be recorded, the method of taking the counts, and the exact use to be made of them in studying their relation to pavement wear and durability. We desire to urge all city engineers, street superintendents and others in charge of pavement maintenance, selection or construction to seize every opportunity offered or which can be created for taking counts of traffic on typical streets. It would seem that, to be of most value in the study of pavement wear, typical sections of light and heavy traffic on each class of pavement in a given city should be taken at least once or twice each year and recorded as a part of the life history of that pavement.

Wood Block Paving

THE information and opinions concerning wood block paving which were collected by the American Society of Municipal Improvements and are printed elsewhere in this issue contain a compendium of conclusions on most of the important features involved in the question of the desirability of and best method of constructing such pavements. Possibly the most interesting set of replies are those to the inquiry concerning the slipperiness of wood block pavements and the grade at which it is safe to lay them. This pavement has attained a general reputation for being slippery, although we are not aware that any considerable number of figures have been collected by which its slipperiness can be definitely compared with that of other pavements. No such figures are offered in the replies submitted, but it is significant that the majority of those expressing an opinion on the subject do not find wood block pavements objectionably slippery, or at least no more so than asphalts and other smooth pavements. As another indication of the same opinion, several cities have wood block pavements at grades of from 2½ to 4½ per cent, and state or imply that no unusual difficulty is found from the use of such grades.

Fire Losses in Chattanooga

WE are informed by Mr. Wm. Toomey, Chief of the Fire Department of Chattanooga, Tenn., that the figures given in an article by a newspaper of that city concerning the fire losses for last year, which article formed the basis of a news note published in our issue of Nov. 30, were incorrect, and do an injustice to the Fire Department. The figure given as fire loss, \$1,053,535, was in reality the total insurance on the properties in which fires occurred; while the total loss on buildings and contents was only \$116,136.79, and the insurance loss was \$96,173.92, or less than 10 per cent of the insurance on the property.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Test Roads for Southern Indiana

Evansville, Ind.—Several short stretches of test roads will be built in Southern Indiana under the direction of an engineer from the United States Department of Agriculture during the next few months. W. B. Anderson, of Velpen, Ind., president of the First District Corn School Association, is trying to secure the co-operation of the Federal authorities in building the test roads. The materials to be used are sand and clay. It is the plan of President Anderson to work up enough interest in each county to put in a strip of the test roads during the winter months and let the success or failure of these first roads determine future operations.

Law Suit Ties Up Large Contracts

Jacksonville, Fla.—The probabilities are that road building in Duval county will be held up for an indefinite time if Judge R. M. Call, in Circuit Court chambers, grants the petition of the Suburban Land Company and others to restrain the Board of County Commissioners and the Board of County Road Bond Trustees from executing any contract or contracts with the Engineering and Paving Company of Jacksonville. A suit was instituted in the Circuit Court last week, the papers being filed late in the afternoon by Attorneys Axtell & Rinehart for the complainants. Recently the County Commissioners awarded the contract for building 19.9 miles of roadway, in various sections of the county, to the Engineering and Paving Company, the bond trustees not approving this award and by written decision going on record to the effect that they will not pay for any work done by this company on this contract.

Staunton's Cave-Ins Have Been Filled

Staunton, Va.—Staunton has about seen the last of the cave-ins, at least from the top of the ground, as work is nearly over in restoring the breaks. The whole amount of earth that went into the cavern was estimated by the general manager at 7,500 cubic yards, of which 3,500 cubic yards went down in Baldwin street and 4,000 on the property of Prof. C. L. Wilson and Hon. Jacob Yost. Repairing the breaks has been interesting, and many have watched the work from day to day. Investigation early showed that there were limestone walls on each side of the breaks, running down not perpendicular, but at an angle of about 14 degrees from the perpendicular. These walls were struck at distances below the surface varying from 15 to 39 feet, and the two walls were from 8 to 22 feet apart at the top, approaching each other as they descended until they came to within about 3 feet, maintaining this distance all the way to the bottom.

Extensive County Road Building

Taylor, Tex.—Barring slight hindrance on account of rainy weather, rapid progress is now being made on the macadam road work of Taylor Precinct No. 4 of Williamson County, for which a \$200,000 bond issue has been made and realized. Two crews of men, teams, wagons, engines, road-rollers and scrapers are being utilized in the work north of Taylor. The crew of county convicts, under Commissioner S. G. Yakey, on the Circleville and Taylor Road, has just completed a three-mile stretch of road from midway between Circleville and Taylor to the Circleville Bridge over the San Gabriel River. This completes the stretch from Taylor to Circleville, a distance of five miles. Another crew of men, teams and scrapers of the Texas Building Company of Fort Worth, under the direction of Manager W. T. Montgomery, is completing the macadamizing of the Taylor and Elm Grove Road, a distance of twelve miles. With apportionments from the county funds and subscriptions from property owners along the line, it is thought that 100 miles of good roadway will have been built in this precinct before the bond issue is exhausted.

Circular Boulevard Feature of City Plan

St. Paul, Minn.—The features which distinguish the Nussbaumer design for a civic center and city plan from all others are the circular boulevard, running from Como avenue, equally distant at all points from the capitol to the market square at Jackson street, and the rerouting of Summit avenue from Dayton, so that it will pass south of the capitol campus and on to Jackson street. It is contemplated that this street may be extended in time to the Sixth street bridge, giving a through parkway from St. Anthony Hill district to Dayton's Bluff. The Cass Gilbert plans for a capitol approach from Seven Corners have not been altered by Mr. Nussbaumer except that the new Summit avenue will enter the civic scheme several squares to



MAP OF ST. PAUL CIVIC CENTER, PROPOSED BY FRED NUSSBAUMER

the north, thus giving a Summit avenue approach somewhat different from that contemplated by Mr. Gilbert. The circular boulevard has many features which commend it to those who have examined Mr. Nussbaumer's plans. It will not require the vacation of any streets, avenues or alleys nor the rearrangement of sewers and water mains. The boulevard is to be 200 feet in width from property line to property line, with a roadway for vehicles on both sides, except between Summit avenue and Cedar street, where a single roadway is planned with promenades on either side. The circular boulevard by way of Como avenue will connect the entire boulevard system of St. Paul, extending by way of Lexington avenue to Summit and the River Drive to Fort Snelling. With the contemplated improvements from the fort into the heart of the city the Cass Gilbert approach from Seven Corners serves as the final connecting link. This means a system which will bring into close unison all the parks and boulevards of St. Paul with the exception of Rice and Smith Parks in the business district.

First Oil-Concrete Highway in Pennsylvania

Harrisburg, Pa.—The first stretch of oil-concrete highway to be laid in Pennsylvania has just recently been completed on the Harrisburg-Linglestown road. It is about a quarter of a mile in length and is between Progress and Paxtonia. The oil-concrete road is an experiment on the part of the State Highway Department, which in 1907 rebuilt the highway from the Eastern terminus of the city to Paxtonia. The section just laid replaces a quarter of a mile of road constructed of concrete. This concrete, it is said, was driven upon before it had hardened and the holes then worn in it deepened as time went on. The new section of road is made of concrete into which are mixed asphaltic oils. The top surface is not arched so much as the rest of the road, the crown being constructed on a basis of three-eighths of an inch to a foot. The crown is the same as that used in laying a brick pavement.

Making Level Street Crossings

Binghamton, N. Y.—A street improvement contemplated during the coming year and which will be appreciated by all pedestrians is the plan to raise all paved street intersections wherever possible to a level with the curb. The experiment was tried on Main street when the new brick pavement was laid and has proved highly satisfactory. The brick is on a level with the walk at the street intersection, and there is no downward step. This is especially beneficial to old persons, women with go-carts and cripples. It will be impossible to improve the central portion of the city in this manner on account of the street car intersections at the corners, but it is proposed to make the repairs on other corners wherever there is a brick pavement, and the move is meeting with general public approval.

Contractors Warned to Cease Obstructing Sidewalks

Forth Worth, Tex.—Commissioner Maddox gives notice of the determination to enforce the new anti-sidewalk obstruction ordinance to the letter of the law. Under the ordinance contractors are required to file bonds when they are compelled to obstruct the streets or sidewalks with building material or rubbish being removed, etc. This requirement has been entirely disregarded by contractors, say the city officials, and notice is given that none may plead ignorance of the law. Building permits must also be taken out before actual construction is begun. Two street department inspectors and two policemen will be detailed to look into violations of this ordinance.

May Tax Toll Road

Hackensack, N. J.—For some time Bergen County has been anxious to acquire possession of part of the Bergen turnpike. The price has been prohibitive, however, a million dollar bond issue of the old turnpike company figuring prominently in the transaction. The Public Service Corporation, some time ago, purchased the turnpike and the trolley road operated over it. The Supreme Court has recently declared that the entire turnpike, being a private thoroughfare and operated for profit, is subject to taxation. It is now believed that with heavy taxation in prospect the Public Service Corporation may be glad to sell the road at a much lower price than had been heretofore.

Plan for Elevated Railroad Structure

Lynn, Mass.—The Lynn Board of Trade has worked out a plan for an elaborate railway structure crossing the Central Square, which is designed to disfigure the city as little as possible, and use exactly the same construction as specified by the original award for overhead structures, but makes a very attractive but almost noise-proof structure out of it, by moulding concrete around the iron girders and latticed steel posts, filling in solid between the iron girders for the purpose of absorbing the greatest possible amount of noise, and paneling the overhead effect underneath the bridge with the same concrete, offering an opportunity for enough ornamentation to make the whole structure of pleasing appearance. There has been no taking away of overhead room underneath the structure and the lighting effect on the structure is sufficient to illuminate the entire territory. The perspective looking through and underneath the structure will show how little objection there can be to the upright supports. While these structures have an ornamental appearance, at the same time the work can be done without any great delay of the whole project or without any excessive additional expense.

SEWERAGE AND SANITATION

Objectionable Results of Drinking Cup Law

Boston, Mass.—It is stated that the new Massachusetts law prohibiting the use of common drinking cups results, on trains at least, in nothing but annoyance and conditions more unsanitary and repulsive than it seeks to abolish. The chief trouble is caused by acrobatic passengers who have acquired skill in drinking from the spigots of the water tanks. Another situation is presented by kindly disposed owners of drinking cups who lend cups to everyone else on the train or donate them to the cupless ones on leaving. Those who can afford it resort to dining and buffet cars and order water at from 15 to 25 cents a drink. Other alternatives are to keep a sharp lookout for restaurants at way stations or to remain thirsty.

Sanitary Fountains Spread Vermin

Fort Wayne, Ind.—The sanitary wells, or "flowing cups," from which school children in Fort Wayne drink, are claimed by Dr. E. A. Crull, of the Health Board, to be directly responsible for the deplorable spread of lice in the schools. As a remedy he urges the installation of more "flowing cups." The "flowing cups" are an arrangement by which the children drink like horses instead of using the old-style cup, bowing their heads over an upright spigot from which a stream of water flows constantly. At recess time dozens of children gather about these "cups" and rub their heads together in a scramble to get a drink. Then the lice get busy and a general shifting of pastures occurs; and the children who weren't infested before get their share.

Pumps to Drain City in Winter

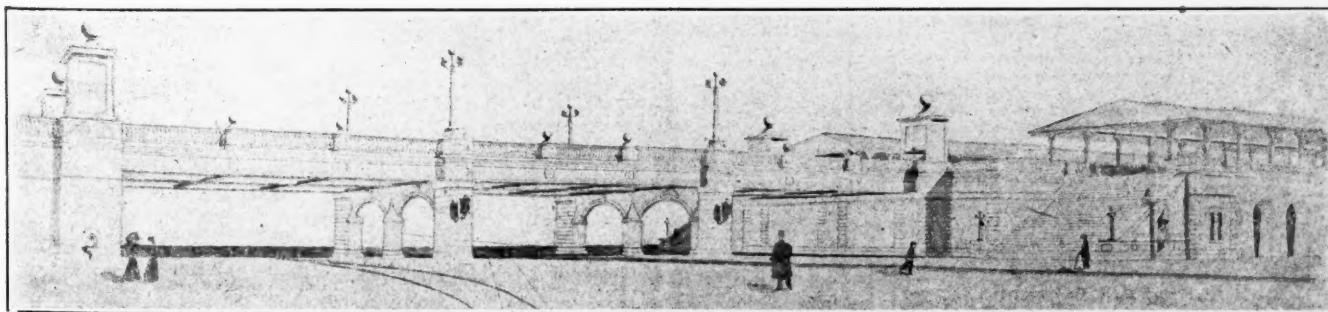
Oroville, Cal.—The pump which has been installed at the city sump at the foot of Huntoon street for the purpose of disposing of the storm water and sewage during the high water period has been given its initial test. Mayor Kusel, members of the Board of City Trustees and a number of citizens were present. The trial test was a success and demonstrated that the sewage and storm water problem can be controlled. During the winter months when the river is full to its banks the outlet to the sewer mains will be converted to the sump, and the pump, which has a capacity of from 7,000,000 to 10,000,000 gallons in 24 hours, will be employed to pump the sewage over the levee into the river.

New Rules Regarding Handling of Food Supplies.

Providence, R. I.—Copies of the rule of the Board of Aldermen, providing for the proper care of foodstuffs in stores, by screening from flies and dust, have been sent to the local grocers, marketmen and peddlers by the Health Department, which will enforce the regulation. The new rule places a restriction upon the wrapping of meats in newspapers and stipulates that the wrappings shall be of clean wrapping paper. A section provides that live poultry shall not be kept in the room where meat is sold.

River States Will Fight Sewage Dumping

Topeka, Kan.—Governor Stubbs has asked the governors of the states bordering the Missouri River to appoint commissioners to draft a uniform law regulating the discharging of sewage into the river. Kansas, Missouri, Nebraska, Iowa and the Dakotas have cities which take their water supply from the Missouri River, and each of these cities in turn pours into the river all its sewage. There have been several outbreaks of typhoid fever in the river towns owing to this.



Attractive and Almost Noise-Proof Structure Suggested by Board of Trade to Railroad for Crossing Lynn City Square

WATER SUPPLY

New Ordinance Governing Fire Pipe Lines

Buffalo, N. Y.—It has been agreed by the Ordinance Committee to report out a new ordinance governing the installation of fire pipe lines and sprinkler connections in buildings. At the suggestion of Alderman Weimar, the new ordinance was amended to exclude from its provisions fire pipe lines which are not connected with water mains or service pipes, but are installed to be connected with fire engines in cases of fire only. The new ordinance requires that consent for connections for fire-pipe lines and sprinkler systems be obtained from the Department of Public Works. The department must be given 48 hours' notice to allow for inspection. Blue prints of the system must be filed. Meters must be installed where the source of supply enters the building. A bond of \$1,500 is required. The charge for the service is fixed at \$24 plus the regular meter rates for what water may be used, except in cases of fire. Commissioner F. G. Ward stated that in 80 per cent of the plants in which connections had been allowed for fire purposes the water was used for other purposes. The opposition of the fire underwriters to meters on fire-pipe lines and sprinkler systems he characterized as in a large degree mythical.

Wants Six Per Cent on Money Deposited

Columbus, O.—Councilman-at-Large George Harper has caused to be prepared an ordinance to compel the city water works department to pay six per cent interest on money advanced by water consumers, who are compelled to make deposits to insure payment of bills. Mr. Harper says that the amount of such deposits is now \$400,000. He argues that the city requires interest from public service corporations under similar conditions and doesn't see why there should be discrimination against water consumers.

Water Still Unsafe

Escanaba, Mich.—City Chemist A. J. Carlson reports that the water at Escanaba is still unsafe in its natural state as taken from the mains and should be well boiled before being used for drinking purposes. Mr. Carlson makes frequent tests and not since it became questionable some time ago has the water regained its former purity.

Wisdom of Artesian Supply

Forth Worth, Tex.—The suggestion that Fort Worth and Dallas join in an effort to secure a joint water supply is not regarded with favor by Commissioner T. J. Powell of the Fort Worth Water Works Department. Mr. Powell upholds the wisdom of Fort Worth in preparing as she has done for the drought which is now an affliction to some parts of the State and to some of the cities of the State. He says for eighteen years Fort Worth has been working on an artesian supply, and this year is a full demonstration of the wisdom of the forethought. He is in favor of Fort Worth going ahead alone as she has done in the past, and thinks with some additional machinery to guard against breaks the city is beyond danger of serious water shortage.

State Engineer Recommends Mechanical Filter

Henderson, Ky.—State Sanitary Engineer Paul Hansen, who visited Henderson some weeks ago and made an inspection and investigation of the water supply and sewage system with a view of the installation of a filtration plant, has made a report to Mayor Thompson concerning the matter. He recommends the mechanical filtration plant for Henderson. This is the style of filter used at Paducah, which was inspected recently by a delegation from this city.

Water Claimed to Be Article of Interstate Commerce

Trenton, N. J.—The receivers of the Hudson County Water Co. have filed a bill in the United States Circuit court, asking that Governor Fort and other State officials be enjoined from enforcing the laws under which the company was prevented from diverting water from New Jersey to fill its contract to supply Staten Island. The receivers allege that the legislation under which the operations of the water company were stopped is in violation of the Federal Constitution because it attempts to prevent the transportation of water, which is described as an article of interstate commerce. It is further held that the action of the State authorities is an illegal seizure of property without compensation and that the legislation impairs the obligation of contract.

City Contests Railroad's Right to Private Water Supply

Montgomery, Ala.—Whether or not the Louisville and Nashville Railroad has a right to lay a water main across a street of Montgomery for the purpose of extracting water from the Citizens' Light, Heat & Power Company is a matter which is now up to the court for a decision. The City of Montgomery is made the party of the second part, in that the municipality is contesting the right of the railroad company to get water for boiler purposes from other sources than from the City of Montgomery. The water which the railroad proposes to use is a bi-product of the light company, hence it can be procured at a less rate than the city rates.

Hydrochlorite May Be Used in Excess

Niagara Falls, N. Y.—The Board of Health will be asked by the Board of Trade to find out if the chemicals used in the purifying of the water of the city are not injurious to people who use the water. It was asserted at a meeting of the Board of Trade that lately there has been an unusual amount of hydrochlorite used in treating the water sent through the main by the private company. The chemical has been used so freely that it can be plainly tasted in the water, several of the members claimed. It can be tasted even in boiled water and in tea and coffee.

Engineers Are Outdone by Industrious Beavers

Stanhope, N. J.—A beaver may not be able to heap coals of fire on the head of one who has done him a wrong, but a colony of paddle tails in this region has heaped up water for the benefit of a land company which had destroyed the dam it had reared by dint of industry and hard work. The war was between the beaver colony, which is protected by law, and a real estate company that had opened up a section and wanted to beautify it with an artificial pond. The beavers were there first, but the engineer gave them no thought when they conceived the idea of making out of the beaver puddle a pond that would beautify the landscape. Accordingly they proceeded to tear down the beaver dam with pick and shovel and build on the same spot an ornate structure of stone and concrete fashioned to fit well into their scheme of landscape architecture. The dam was completed only a short time ago and the beavers had remained in seclusion so long that they had been entirely forgotten. Then one day there was another and a larger dam of beaver manufacture below the masonry dam, and before the men awoke to what was going on the nice, new dam was out of sight. Inasmuch as the beavers had made a larger pond than the engineers planned, their man rivals are inclined to pass by the slight put on their work and accept the gift.

Contracts With Neighboring Village for Water

Union, N. Y.—The Board of Water Commissioners of the village has made a contract with the Village Board of Endicott for supplying Union with city water, and the work of connecting the mains on North street will soon be completed. The water supply for Union has proved to be inadequate for fire purposes and the homes, and the authorities have taken this step as the most feasible plan for bettering conditions. The water pressure in Endicott is about 90 pounds, while in Union it is only 40 pounds. Meters are being installed in all the business places and residences where city water is taken. As soon as the connection with Endicott is completed a thorough test of hydrants will be made.

Two Accidents to Engines Within Week

Youngstown, O.—For the second time within a week the water works pumping station has been crippled by a breakdown, and the pumping capacity of the plant has been cut down until the break is repaired. The second accident is in the cracking of the bed plate of the second pump. Another plate has been ordered and the pump will be operated at reduced capacity until the plate arrives and is placed in position. The large pump will be operated at an overload capacity until the break is repaired, and no shutdown is feared. Director Duesing says. The break which occurred the past week happened in the afternoon when the pump was running slowly, and was detected before any serious results followed. A duplicate of the broken casting was made at the William Tod plant and by working overtime the plant was repaired the evening of the accident. Had this first break occurred in the morning, when the pumps were working to their limit, the machinery would likely have been wrecked in a manner that would have taken a month or two to repair.

Bay Cities Will Aid in Fight for Hetch Hetchy

Oakland, Cal.—A movement to unite the cities of Oakland, Berkeley and Alameda with San Francisco in the fight to prevent the revocation of the grant of Hetch Hetchy Valley as a reservoir site for the bay region has been initiated in the City Council by President B. H. Pendleton. Pendleton introduced a resolution, which was adopted, favoring the appointment by the three east bay cities of an engineer to act with John R. Freeman of New York and Professor Marks of Stanford University as the third member of the Board of Engineers selected to prepare a report to be submitted at the hearing before the Secretary of the Interior. The city officials of the three cities will decide unofficially on their report regarding the third board member. Then the councils of the cities will appoint him simultaneously, authorizing him to work with the two members named by San Francisco.

Resume Negotiations With Spring Valley Company

San Francisco, Cal.—Mayor McCarthy and members of the Board of Supervisors have renewed conferences with the Spring Valley Water Company with reference to the sale of its plant to the city. The company officials want \$50,000,000 for the plant and the city is not willing to pay over \$35,000,000. The general drift of the discussion seemed to indicate that the city would like to buy a portion of the plant for less than \$35,000,000, leaving to the company other portions which would be valuable to them.

Tonawanda Water Unfit to Drink

North Tonawanda, N. Y.—Reports received from Eugene H. Porter, State Health Commissioner, by Dr. F. W. Bentley of North Tonawanda and Dr. H. M. Edmonds of Tonawanda of the water tests made upon the domestic water supply in the Tonawandas show that the water is far from being pure and is unfit for use without being boiled or filtered. John H. Reynolds of Albany came to the Tonawandas on October 10th and took samples of water from taps in business places. The Tonawanda test was made on October 25th. On October 19th the North Tonawanda test was made. The analysis indicated that it was unfit to drink.

Water Problem the Absorbing Topic

Norwich, Conn.—The all-absorbing topic in Norwich is water and how to get enough to supply the city until the drought ends. For twenty years the problem has been under consideration but has not been as insistent as now. Two sources of supply are available, one Pease Brook and the other Gardner Lake. The Pease Brook supply is satisfactory except in the matter of cost, which it is found would be a heavy burden to the town. Water could be taken from Gardner Lake at a cost of perhaps \$125,000. By taking it in the spring when a dam belonging to a private company is overflowing there would be no water rights to be bought.

Pitometer Survey Reveals Great Discrepancies

Yonkers, N. Y.—The report of the pitometer survey of the water supply made by John A. Cole and Edward S. Cole of New York to determine the causes of the immense amount of water lost here yearly has been made public by the municipal authorities. The report shows that the daily loss of water in Yonkers totals 1,500,000 gallons. Attention is called to serious losses from the large mains in the manufacturing districts, due not only to the underground leaks, but to the use of water by large consumers without meters to record the amounts. The report caused a stir on account of the revelations made with reference to conditions at the Smith Carpet Works and the Waring hat plant. These industries employ nearly 10,000 persons. A three-day test at the Smith factory, the report states, showed 940,000 gallons of water pumped but not metered, and investigation disclosed no serious leaks from the mains in the vicinity. A second test, according to the report, showed a discrepancy of 479,000 gallons in two days. In the report the following statement appears: "The pipe connections between the water works system and the mains of the Smith Carpet Company are such, and the mains in the yards of the company are so connected and located that every facility is afforded for surreptitious and unmetered use of city water." In the district in which the Waring factory is located the daily discrepancy between the pitometer survey and the meter statements was 500,000 gallons. The report adds: "The discrepancy around the hat factory was due either to leaks or to surreptitious use."

STREET LIGHTING AND POWER**Electric Lights in Alleys**

Baltimore, Md.—Superintendent of Lighting McCuen has begun the installation of incandescent electric lights to replace the naphtha lamps now used in alleys where there are no gas mains. He hopes to have 600 of the incandescent lights in service by the end of next year. There are now 998 naphtha lamps in use. The incandescent light, Mr. McCuen says, is 50 cents a light cheaper each year than the naphtha, besides being superior in quality of service. Most of the naphtha lamps are in the alleys in the western and northwestern part of the city, where gas mains have not been laid. Wherever possible gas lamps are being installed at a cost of \$18 a year. Mr. McCuen has prepared a report in compliance with a request made to Mayor Mahool by the taxpayers' committee on the city finances of Philadelphia concerning the cost of lighting Baltimore streets.

Card Records of Outages to Be Made by Citizens

Gadsden, Ala.—Because of the frequent complaints which have been made that the arc lights of the city are not burning, a plan has been adopted whereby it is believed a record will be kept of the lights. Today cards were sent out to the residents of the streets living nearest to where the lights are located. These cards are for the purpose of making a record of the number of times a light is out and of the times when it is not burning well. These cards will be collected and inspected by the Light Committee.

Boiler at Village Lighting Plant Explodes

Long Prairie, Minn.—With a noise that was heard for miles, the boiler at the village lighting plant went to pieces, involving a loss of \$1,500. No one was injured, but the village will be considerably discommoded until the damage can be repaired.

Novel Plan to Light Streets

Knightstown, Ind.—This town is trying a novel plan to light the streets. The electric light station is a municipal plant and free current for one porch light is furnished all consumers who will provide and maintain the required lamp. The dark places between corners in the residence districts are now made bright.

Denied Privilege to Bid

Muskegon, Mich.—Another act in the municipal lighting plant controversy, which has been going on in Muskegon for several months, was sprung at the last council meeting. The Muskegon Traction & Lighting Company, which lost the case in which it sued the city for right to bid on the city lighting, submitted a proposition in which it said that if the city would give it a chance to submit bids it would guarantee to reduce the cost of arc lighting from 86 cents to 60 cents per light, but the councilmen were loth to be dictated to. It is now supposed that the traction company will take its case to the Supreme Court.

New Lights Please Victoria

Victoria, Tex.—Victoria's new lighting system, provided by the Victoria Manufacturing Company, was partly installed last week and is a big improvement over the old system. The new system includes 150 60-candlepower tungsten lights and seven 1200-candlepower arc lights. One hundred and forty of the tungsten lights have been installed and the other ten will be placed wherever the City Council directs. When the system is completely installed Victoria will be one of the best lighted cities of its size in the country. The old system included 150 16-candlepower lights.

New Lighting for Washington

Washington, D. C.—Improvements in street lighting are expected as the result of a trip of Commissioner Judson to a number of towns and cities to look into the problem. He was most favorably impressed with the arc lights used in Boston, which gave three times as much light as those used in Washington and cost only 20 per cent more to maintain. The lights about the Pennsylvania station in New York, Major Judson thought, were specially suited for use about public buildings, such as the White House.

State Commission Reduces Newburyport Rates

Newburyport, Mass.—In a recent decision the State Gas Commission recommends that "on and after January 1, 1911, the net price for gas sold by the Newburyport Gas & Electric Company shall not exceed \$1.25 per 1,000 cubic feet, and that the net price charged for electricity shall not exceed 14 cents per kilowatt hour, with such minimum monthly charges to its lighting customers as it now employs, but not exceeding \$1 per month, and that the price of electric street lights burning all night and every night, of the type now installed, so long as not less than the present number of each type is maintained, shall be not more than \$90 per year per arc lamp, and not more than \$30 per year per incandescent lamp." No reduction was ordered in the price of electricity for power, as that was deemed satisfactory. The present price is \$1.60 per 1,000 cubic feet for gas, with 20 cents per 1,000 off for cash; 20 cents per kilowatt hour, with discount of 25 per cent for prompt payment for commercial electric lighting and 10 cents per kilowatt hour with discount of from 5 to 65 per cent, according to the size of the bill; \$73.50 for arc and \$30 for incandescent electric street lights operated upon a moonlight schedule to 1:15 a. m. The decision of the commission was upon a petition of the Mayor and Board of Aldermen for a reduction in the price of gas and electricity, and followed a hearing that was held in the early summer.

Cluster Lights Will Change Darkest Street to Lightest

Ogden, Utah—The posts for the cluster lights on Hudson avenue have arrived and will be put in place, under the supervision of the city electrician, during the week. It is said that after the cluster lights have been installed Hudson avenue will be the best lighted thoroughfare in the city. Now it is probably the darkest.

City Copyrights Lamppost

Riverside, Cal.—The city authorities have developed a very original design for street electroliers. The style of the post carries out the idea of "the mission city." Several of the public buildings are of the old mission style of architecture, and the reinforced concrete posts are therefore in keeping with the surroundings. The design has been copyrighted and presented to the city of Riverside. It can therefore be used in no other place.

St. Louis May Have Natural Gas From Oklahoma

St. Louis, Mo.—Following the announcement by the Laclede Gas Light Company and the Busch-Everett Company that they had abandoned all intention of supplying natural gas to St. Louis, on account of the prohibitive expense of bringing it from the Caddo fields in Louisiana, it was announced by the Municipal Assembly that negotiations with the Rodgers Syndicate, which proposes to bring natural gas from Oklahoma, would be immediately resumed. Mayor Kreismann and Chairman Hildenbrandt of the House of Delegates Public Improvements Committee, which has the Rodgers bill, both expressed themselves as favoring legislation to create competition, if the city's interests can be safeguarded. If the Rodgers people will accept conditions to make the franchise really competitive, it is practically certain a bill will be passed before the April adjournment. A representative of the Rodgers Syndicate said that his people were still eager to get the franchise and are willing to guarantee to furnish artificial gas in sufficient amount to be competitive if natural gas fails.

Ornamental Street Lighting Considered in Topeka

Topeka, Kan.—Sharp competition is now going on among the street lighting firms to furnish the ornamental illumination of Warren avenue. One of the last propositions received was from the Pitner Gasoline Lighting Company of Chicago. In a communication to the Commercial Club a representative of the company wrote:

We will install 12 poles in a block with a lighting capacity of 2,000 candlepower—six poles on each side of the block—for \$1,073, and will maintain the lights from dusk until midnight, seven days in the week, for \$3.75 per light.

The fixtures which this proposal covers are of dignified proportions and substantial designs. The light supplied is a powerful white light of high illuminating value.

The distribution of the light more nearly approaches the lines laid down by scientific investigation than any other fixture practical for street lighting. The lights are successfully used in Chicago, Hartford, Conn.; Winnipeg, Manitoba; Quebec and other cities.

FIRE AND POLICE

Inspect Three New Fire Houses

Birmingham, Ala.—The Mayor, Chief A. V. Bennett and Chairman Rivers Copeland, of the fire committee, made a trip of inspection of the three new fire stations which have just been completed, preparatory to putting them in commission. The new stations are No. 5 on North Highlands, No. 6 at Fourteenth street and Third avenue and at East Lake. Chief Bennett announced that he will move the aerial truck now at No. 1 to No. 6, and will move the chemical automobile now at Woodlawn to East Lake. There will be no immediate need for the purchase of more apparatus.

Auto Fire Apparatus for Western Town

Casper, Wyo.—Owing to the rapid growth of the town, which now contains 3,500 inhabitants, and the building of many fine residences at a long distance from the fire house, Harold Banner, Chief of the Fire Department, and the City Council decided to have an up-to-date fire apparatus. The auto apparatus shown in the cut, purchased from the Anderson Coupling and Supply Co., is the result. The



AUTO COMBINATION CHEMICAL, CASPER, WYO., FIRE DEPARTMENT

truck, briefly described, is as follows: Forty-five horsepower, water cooled engines, double chain drive, geared to 25 miles an hour, Firestone side wire solid tires, carries 1,200 feet of hose and 10 men; has 40-gallon chemical tank and 250 feet of chemical hose, two portable extinguishers, roof and scaling ladders, axes, crowbars, etc.

New Steamer Arrives

Grand Rapids, Mich.—The new Nott fire engine which was recently purchased by the Fire and Police Commission, and which is the latest and largest type of steamer manufactured by the Nott Fire Engine Company, of Minneapolis, Minn., has arrived in this city. The engine is the latest and most improved type of the fire-fighting machine and is of the same pattern now being used in the leading cities of the country. The engine will be given a severe test by Assistant Master Mechanic Frank Hill, it is expected, within the near future.

Drilling Police in Elementary Military Tactics

Leavenworth, Kan.—Since the acquisition of the old building next to the City Hall by the city and its subsequent cleanup, it has been the custom of Chief J. T. Taylor to call the patrolmen of the city together once or twice a day and drill the entire force in the different exercises of marching and police tactics. When the first drill was begun two squads were instructed, one at 2 o'clock and one at 5 o'clock in the afternoon. Later the men have been drilled just before roll call, the entire force working at one time. The tactics which are being taught the patrolmen are those of the regular army. The different platoon maneuvers are taught the men; also straight marching formations and other drill exercises.

First-Aid Appliances in Patrol Boxes

Los Angeles, Cal.—Every police patrol box in Los Angeles will be supplied with first-aid bandages and medicines, so that a policeman can care for the victim of a street accident before the ambulance arrives.

Annual Review of San Francisco Police

San Francisco, Cal.—The annual inspection and drill of the San Francisco Police Department, which was held on October 29, reflected great credit on the members and their commanding officers. The perfection of the drilling and marching proved conclusive to the spectators who lined the sidewalks in Van Ness avenue that the men are in an excellent state of discipline and that San Francisco has one of the best police departments in the country.

Mayor McCarthy was an interested spectator and at the conclusion of the review complimented Chief Seymour and the men under him on the excellent display made by the



VIEW OF SAN FRANCISCO POLICE FORCE RESTING IN VAN NESS AVENUE DURING ANNUAL DRILL AND REVIEW

department. "San Francisco is proud of her Police Department," said the Mayor, "and the highest praise is due the men and their officers for the showing they have made." The Police Commissioners and members of the grand jury spoke in similar strain and highly complimented the department for its efficiency.

The accompanying photograph, by George W. Blum, official photographer of the Police Department, was taken while the men were standing at rest in Van Ness avenue, between Turk and Eddy streets. In the foreground, reading from left to right, are Police Commissioners Spiro and Henderson, Mayor McCarthy, Chief Seymour and Police Commissioners O'Connell and Sullivan.

Jamestown Taxpayers Vote for Paid Fire Department

Jamestown, N. Y.—The taxpayers of Jamestown voted last week on the proposition to abolish the volunteer fire department and establish a paid department. There was a large vote and the proposition was carried by a majority of 74. The question of appropriating \$40,000 for additional equipment for the department was also carried by a plurality of 217. Jamestown is one of the largest cities of the State that maintains a volunteer fire department, and an investigation by the committee of fire underwriters recently resulted in a report advocating a paid department.

Autos for Philadelphia Fire Service

Philadelphia, Pa.—In the estimate for 1911 recently submitted to Councils Finance Committee Director Clay has asked for appropriations for 11 assistant engineers, each of whom is to be provided with an auto. The director will also ask for six auto combination chemical wagons, to be placed where they can be tested for service with a view to the ultimate substitution of these machines in the place of all horse-drawn apparatus of similar class.

Ingenious Switchboard Installed

York, Pa.—Warren E. Fastnacht, City Electrician, has designed and is putting up a new electrical switchboard at the Union engine house. The old frame will be used, but the mountings are new. A feature will be a time switch which can be set to extinguish the house lights at any time after the engines and crews leave the house to respond to an alarm of fire. At present the lights remain burning, sometimes several hours, until some one goes in and turns them out. There is also a lightning arrester, and a switch to toll the bell instead of doing it by pulling the rope by hand. The same appliance will ring the bell for chemical engine calls and for meetings. The indicator will be lighted from the inside instead of outside, as formerly. Altogether there are 18 switches on the board.

GOVERNMENT AND FINANCE

Too Much Initiative

Berkeley, Cal.—Through the action of James H. Todd, whose recent attacks upon various phases of the municipal government have been numerous, Berkeley faces another effort to secure an initiative vote, this time on the ordinance recently adopted by the Council, regarding the manner of filing petitions, calling and holding elections under the provisions of the charter. Todd demands, if his petition succeeds, a reference of this question to the voters at the next city election. The ordinance attacked by Todd was adopted by the Council October 25 and provides that each signer of a petition for a special election for the adoption of an ordinance must state his reasons for so signing, but permits his withdrawing his name without stating his reasons therefor. The Council adopted this ordinance because it believed that sufficient care had not been used by citizens in signing initiative petitions and that by necessitating greater care the expense of unnecessary elections might be saved.

Test Cleveland Bond Issue

Cleveland, O.—The Supreme Court at Columbus will decide whether bonds issued by authority of a popular vote are to be included in determining the 4 per cent limit fixed by the Longworth law. City Solicitor Baker, of Cleveland, has filed suit against the city of Cleveland, Mayor Herman Bahr and Auditor Highland B. Wright to test the validity of a \$790,000 city bond issue, authorized last spring by the Council. Attorney-General Denman has ruled that all bonds issued must be considered in determining the limit.

City Audit Saves \$20,000

McKeesport, Pa.—As a result of the city audit it was discovered that Bowman Brothers Company were overpaid \$20,000 two years ago on their contract for the construction of the filtration plant. When the contract for the filtration plant was let to the Bowman Brothers Company 10 per cent of the full amount of the contract was withheld, as is customary. Alexander Potter, of New York City, was the engineer in charge of the work and when he presented his estimates to Comptroller Soles the 10 per cent withheld was included in the cost. Comptroller Soles, it appears, did not know this, and when Mr. Potter presented the final estimate on the work at its completion the Comptroller added 10 per cent and paid the bill. When informed of the error Bowman Brothers Company promptly returned the money with interest.

The audit has also brought out the fact that water rates amounting to \$42,000 had been rebated within the last eight years, most of them without authority from Councils.

Features of St. Paul's Charter

St. Paul, Minn.—The Charter Commission last week practically decided to include in the new proposed charter many features of the commission forms of government in force in Des Moines, Galveston and other cities. The charter will not provide for complete commission government, but will combine features of that system with the present form of government. If the proposed charter is adopted, the Common Council will be made up of two houses, retained as a dual governing body, but every other board, excepting the Water Board and Board of Control, will be eliminated and the powers vested in an administration board, composed of Mayor, Corporation Attorney and Commissioners of Finance, Public Safety and Public Health.

Municipal Insurance Carried

Racine, Wis.—There is a movement on foot by the city to carry its own insurance on all municipal buildings, such as the city hall, school houses and fire stations. The proposition is to provide a sinking fund to take care of any fire loss. The city now carries \$310,000 worth of insurance on its buildings, \$250,000 of which is on the public schools. The rate of insurance is \$1.70 on \$1,000 for three years, which means that the city pays \$5,270 every three years in premiums. It is pointed out that the only fire loss that the city has had since its incorporation was at the Jefferson School a few years ago, when the damage amounted to \$2,000.

STREET CLEANING AND REFUSE DISPOSAL

New Street Sprinkler on Trial

Chicago, Ill.—The Street Department has recently been testing an improved sprinkler invented by a young Norwegian and after weighing the appliance in the balance has found it an efficient contrivance. Mr. Jens Sundby, who was a machinist in an engine shop in the old country, has been here eight years and after considerable study has patented a device by which an entire street of 30, 40 or 60 feet width can be sprinkled in one trip with water or oil, thus saving much time spent in driving back and forth sprinkling a narrow strip at each passage. On the rear of the tank there is a solid brass valve operated from the driver's seat so that the thickness of the stream can be regulated at will. This in turn leads into two other valves where the width of the section sprinkled can be regulated from 1 foot to 60. Either valve can be closed and an obstruction can be placed between them so that the driver without leaving his seat can drive up the middle of the street and sprinkle the entire street, one side or both sides, omitting the car track. The same wagon or automobile truck and system of valves can be used for sprinkling with water, washing the streets, sprinkling crude oil or mixed oil. A similar appliance shown in action on the fire plug can be attached to a car. The air pressure which makes the heavy spray possible is generated by the hind wheels, while the appliance for the same rests on the rear axle.

Cost of Street Cleaning in Jersey City

Jersey City, N. J.—Street and Water Commissioner John E. Carlock last week discharged 110 street cleaners on account of lack of funds, the Finance Committee refusing to grant him a supplementary appropriation. In commenting on the matter the Commissioner said that his Street Cleaning Department had a very fine record for economy. For the year ending November 30, 1910, the Board of Works asked for \$151,296, made up as follows: Removing snow and ice, \$17,001; street cleaning, \$129,138; plant, \$5,158; total, \$151,298. This was reduced by the Board of Finance to \$148,343. With this sum the department cleaned 11,566 miles of street, removed 78,606 cubic yards of dirt with 8 foremen, 35 drivers and 120 laborers at a cost of \$11.23 per mile. The cost of brooms is given as follows: Sweeping machine brooms, five a month, \$12 each; hand brooms, 50 cents each, two per month per sweeper. The department is allowed \$500 per month for maintenance for all such expenses as brooms and repairing and painting 11 sweeping machines, 33 carts, 6 sprinkling wagons, 33 sets of harness, 13 sets team harness. Commissioner Carlock compares the cost of cleaning streets per mile with that of Newark, where the standard of cleanliness is very high. He gives the Newark cost for hand sweeping at \$32 per mile and machine sweeping \$22 per mile.

Cost of Garbage Disposal by Incineration

Grand Rapids, Mich.—H. E. Briggs, Commissioner of Public Works of Milwaukee, on a recent visit to Grand Rapids made for the purpose of inspecting Grand Rapids method of disposing of garbage by feeding it to pigs, stated before Mayor Ellis, General Manager Freshney, the Board of Health and Health Officer Slemons that the Milwaukee incinerating plant was now consuming garbage at a cost of \$2.85 per ton, where Milwaukee thought that it would only cost it about 45 cents per ton when the plant was installed. The daily pay roll of the plant he placed unofficially at \$641 per day, but in reply to General Manager Freshney did not attempt to tell how many men were employed at the plant or how many were actually needed. He did say that the system as it was at present being operated was unsatisfactory, and that he came here for the purpose of making an inspection of the piggery method by which this city is getting rid of its garbage—that is all of it the hogs will eat.

Pleased with Municipal Ash Removal

Woodbury, N. J.—The removal of ashes from Woodbury residences by the city teams on regular days has been such a success that the city fathers will be urged to remove garbage too.

RAPID TRANSIT

Poor Service in Cleveland

Cleveland, O.—J. J. Stanley, president of the Cleveland Railway, says that the service given by his railroad is rotten. The officials are doing all in their power but the equipment is entirely inadequate. For three years improvements and extensions have been neglected and now the company cannot keep pace with the growth of the city. At least 150 new cars are needed at once and a million dollars worth of improvements at the power plant.

Storage Battery Cars for Use in Rush Hours

Philadelphia, Pa.—In his efforts to assist in solving the transit problems for this city Mayor Reyburn has had a critical examination made of the Edison storage battery car now in operation in East Orange, and early next year a car of the Edison type will be brought to Philadelphia and a demonstration given on the tracks of the Rapid Transit Company. These arrangements were completed last week, when James F. McLaughlin, Chief of the Electrical Bureau, and Harlan Page visited the Edison plant, inspected the battery and then made several trips in the street car equipped with the battery. In his report Mr. McLaughlin says:

I thoroughly tested the car that Mr. Edison has constructed, which is now running on the tracks of the Erie Railroad between West Orange and Forrest Hill, a distance approximately of four miles. The car complete weighs approximately 15 tons and seats 40 people. The average mileage on one charge of the battery is 125 miles.

The introduction of this car as a whole will solve many problems connected with street railways. As an illustration of the usefulness of this car in the city of Philadelphia I would cite two reasons why it will be of great value: Take the hours in the early morning, from 6 to 8.30, when the power plants are taxed up to their capacity, these storage battery cars could be charged during the middle of the day, when the loads are light, and dropped in as trippers at the hours referred to without any tax whatever upon the power plants.

Again, after a certain hour in the evening, say 12.30 or 1 A. M., most of the power plants could be shut down and the night lines operated by these cars. It would seem to me conditions in this city are ideal for the introduction of cars of this type.

The cost of operation, Mr. Edison maintains, would not be more than two mills per car mile. The life of the battery under the conditions referred to in connection with street railway work, it is claimed, would be ten years.

Caution Advised in Subway Projects

Pittsburg, Pa.—In his annual report to Council, Mayor Magee advises that great caution be exercised in regard to rapid transit subway problems. He says:

One of the projects to which the public looks forward to as at least a partial solution of the railway transportation problems is rapid transit by means of a subway. The difficulty and the danger regarding a subway is that the mistakes of the past with reference to the surface systems may be repeated. Since the population of the city does not now justify a subway and could not support it, the enterprise would not be profitable, but would actually be operated at a loss for a period of years, thus compelling promoters to overcapitalize the property in order to supply the deficiency in earnings and to make their profits for such period out of capital account. The project is popular, there is much demand for it, but its advocates must bear in mind that a ready ear was given the promoters of the passenger railway and traction companies under exactly the same circumstances.

This generation, in the light of its own experience from the improvident grants of the past, must be more honest with posterity than to deliberately put it, with reference to rapid transit, in the same position as we find ourselves with reference to surface transportation, owing to the mistakes of the past generations.

Life Guards and Fenders Ordered on All Street Cars

South Bend, Ind.—Every street car operating in South Bend must be equipped with life guards and fenders by April 1, 1911, according to action taken at the last meeting of the Common Council. The penalty provided in an ordinance adopted under a suspension of the rules is a fine of from \$5 to \$200 and each day's violation, the measure specifies, is constituted a separate and distinct offense. The new statute further ordains that cars with fenders in need of repair come under the same classification as cars not fully equipped.

MISCELLANEOUS

Negro Segregation in Baltimore

Baltimore, Md.—The Democrats in the first branch of the City Council have passed, for second reading, a favorably reported ordinance for the segregation of negroes in this city. The Democratic majority will likely adopt the ordinance, which is the result of the depreciating effect on property values in the residential section by the blacks becoming tenants therein. On several avenues the presence of negro residents has lowered values from 30 to 50 per cent. The committee in its report says that "unless some early and effective solution is found, more friction and disorder between the races will result," and "that public policy demands preventive legislation." The report further says: "No fault is found with the negroes' ambitions, but the committee feels that Baltimoreans will be criminally negligent as to their future happiness if they suffer the negroes' ambition to go unchecked. The existence of such an ambition is a constant menace to the social quietude and property values of every white neighborhood in Baltimore." The ordinance forbids white persons moving into an obviously negro residential block and lays a restraining hand on negroes who would locate in white residential sections. If the ordinance is passed the negroes will at once appeal to the United States courts.

Kansas City Far Ahead in Boulevards and Parks

Kansas City, Mo.—That Kansas City is many years ahead of any city in the United States in parks and boulevards is the opinion of Flavel Shurtleff, Boston, Mass., secretary of the National Conference on City Planning, who spent several days in Kansas City going over the park and boulevard system and making a digest of the laws and ordinances governing park and boulevard construction.

Ordinance Prohibiting Smoking in Council Meetings

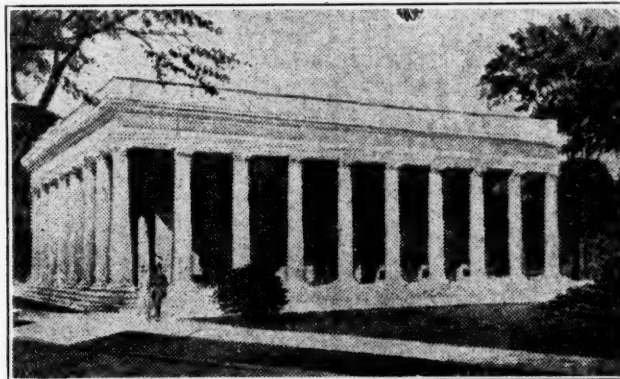
Montgomery, Ala.—Alderman J. D. Cody objects to aldermen, reporters and visitors smoking while the city council is in session. He therefore introduced an ordinance at the last meeting of the city council which requires that after the passage thereof smoking shall be tabooed while the council is in session. At the time Mr. Cody introduced his ordinance the president of the city council was smoking a cigarette as were a number of the aldermen. One or two more of the aldermen were smoking cigars of various qualities. Around the reporters' table there was in evidence one genuine briar pipe, one of doubtful nature and an old-time corncob. Mr. Cody's ordinance was referred to the cemetery committee.

Convention Hall on River

Philadelphia, Pa.—In discussing the feasibility of a Convention Hall over the Schuylkill River, James Christie, formerly chief engineer of the American Bridge Company, in a letter to E. J. Berlet, chairman of the Town Meeting Convention Hall Committee, expresses himself as approving the proposed site and gives the opinion that the cost of foundation and floor for supporting the structure would be less than that of a similar area of land in an equally desirable place. In his letter Mr. Christie goes on to call attention to some possible engineering objections that might arise, and concludes with the suggestion that some valuable adjuncts might be built to the proposed hall, among which he enumerates museums for exhibiting systems and devices for the prevention of smoke and similar nuisances; means of preserving health and preventing the spread of disease; illustrating fire prevention, the loss of life by fire and the best means for preventing such catastrophes, and showing methods and devices for preventing accidents, and saving life, especially in connection with industrial operations. The possible objections offered have been answered by Mr. Berlet, as chairman of the committee. In answer to the query as to whether the proposed area over the river would be sufficient for the purpose, he replies that the available site is sufficient to inclose a hall seating 25,000, in addition to adequately taking care of all desirable adjuncts. Answering the query as to whether there would be an objectionable vibration communicated to the structure, Mr. Berlet said that could be overcome.

New City Hall at Wilmette

Wilmette, Ill.—After twenty years of effort Wilmette is at last to have a new and adequate City Hall. The building will be completed on the 1st of January and dedicated soon afterward. The hall is a "peristyle" type of building. That is, a building encompassed with a row of columns on the outside, harmonizing the features of the site with those of the building which faces streets on all sides, and.



NEW CITY HALL TO BE OCCUPIED JANUARY 1

correspondingly, each side is of equal importance. The columns surrounding the building are at a distance of eight feet out from the walls, thus forming an open colonnade. The columns are of solid stone. The entablature over these columns is seven and a half feet high, and also of stone, while the walls of the building proper are faced with gray brick, nearly matching in color the half gray of the stone. The entire building, which will cost \$25,000 rests on a platform which is raised four steps above the grade. The steps also go around the building. The building proper, exclusive of the portico, is 44 x 64 feet. In the first story are the council chamber and accessories, office for police and commissioner of public works, large vault, etc. The basement contains large work and store rooms, heating plant, and coal space. Also a separate brick enclosed room for the village lockup. This latter is on the most approved lines, being well lighted and ventilated, containing three cells. The second story of the building is ten feet high. There are twenty-four windows, each seven feet high, lighting it. The finishing wood is quarter oak. Tile and marble are used in the halls and vestibule.

Riverside Drive to Be Majestic Outdoor Gallery

New York, N. Y.—Park Commissioner C. W. Stover announced last week that plans are on foot to convert Riverside Park, from Seventy-second to 129th street, into an outdoor gallery for commemorating notable Americans by statues and busts of marble and bronze. He said that the adornment of the strip of park which skirts the east bank of the Hudson is only in its infancy, and predicted that before long it would be one of the greatest outdoor galleries in the world, more majestic even than those of Greece and Rome. The Commissioner also said he had been authorized by the Sinking Fund Commission to take steps looking to the abolition or covering of the New York Central tracks along the western shore line of Manhattan, and that soon Riverside Park will stretch unbroken from the street level to the water's edge. Mr. Stover's announcement was made in an address at the unveiling ceremony of the Brownson monument in Riverside Park, at the foot of West 104th street.

Toll Rates Over McKinley Bridge.

St. Louis, Mo.—Pedestrians using the new McKinley Bridge in preference to the Eads Bridge will save the price of a 2-cent postage stamp, according to a schedule of prices to prevail on the bridge given out by the Illinois Traction System Tuesday. Pedestrians will be charged 3 cents; bicycle and rider, 5; motorcycle, 10; passenger automobile, 1 seat, 20; more than one seat, 35; freight automobile, 40; two-wheeled cart, 15; cattle, horses and mules, 10 cents per head; sheep and hogs, 4; automobile, light delivery, 15; and two-horse vehicle, 20.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Fireman—Tenure of Office

State ex rel. Drifill v. City of Anaconda et al.—A city cannot excuse removal of a member of the Fire Department in violation of Rev. Codes, prescribing the manner in which firemen may be removed on account of having reached the constitutional limit of indebtedness and of being in financial straits, where it has not taken advantage of the act which authorizes cities in such condition to pay their running expenses from current revenue on a cash basis.—Supreme Court of Montana, 111 P. R., 345.

Officer—Detective—Term of Office

Reising v. City of Portland—A section of the charter of the City of Portland provides that there shall be elected a Mayor, Treasurer, Municipal Judge, City Attorney, Auditor and 15 Councilmen, who shall be officers of the city. Another section prescribes the terms of such officers. Municipal officers embraced in a department, which includes detectives, are subject to the civil service rule. Constitution provides that such other city officers as may be necessary shall be elected or appointed in such manner as may be prescribed by law. An article provides that, when the duration of any office is not provided by the Constitution, it may be declared by law, and, if not so declared, the office shall be held during the pleasure of the authority making the appointment, but the legislative assembly shall not create any office, the tenure of which shall exceed four years. Held, that a detective is not an officer within the meaning of the Constitution.—Supreme Court of Oregon, 111 P. R., 377.

Charters—Right to Build Bridges

Kiernan v. City of Portland et al.—Under Constitution, as amended, providing that the legal voters of every city and town be granted power to enact and amend their municipal charters, subject to the Constitution and criminal laws of the State, a city, subject to such restrictions, may include in its charter, by amendment, any provision or right that the Legislature might have granted before the Constitution was amended, and hence a city by amendment to its charter has a right to locate and construct a public bridge over a river at any point where such river is exclusively within the municipal boundaries.—Supreme Court of Oregon, 111 P. R., 379.

Taxation—Assessment Omitted

State ex rel. M. A. Hanna Dock Co. v. Willcuts, City Clerk.—Statute 1898 provides that any property omitted from assessment in any of the three next previous years by mistake or inadvertence shall be entered once additionally for each previous year of such omission. A part of a large mass of coal was assessed to a coal company in the year 1908; but the remaining coal was not assessed because of the mistaken assumption that it was owned by a railroad company so as to be exempt from local taxation. Held, that the latter coal could be assessed to the coal company in 1909 as against the objection that the assessment of 1908 was conclusive.—Supreme Court of Wisconsin, 128 N. W. R., 97.

Officers—Constitutional Provisions

City of Louisville v. Vreeland.—Contemporaneous construction by the officers of a municipal corporation cannot override a mandatory provision of the State Constitution by which a special law creating the office of gas inspector for the city was repealed.—Court of Appeals of Kentucky, 131 S. W. R., 195.

Municipal Corporations—Cloud on Title

Ripinsky v. Hinchman et al.—A suit cannot be maintained by citizens of an unincorporated town to relieve it of an alleged cloud cast, on the title to lots and blocks by a conflicting homestead claim and surveys, since the town could make no claim of title to any of the lots and blocks, but the case would necessarily rest on the claim and title of the individuals, and not of the town.—United States Circuit Court of Appeals, 181 F. R., 786.

Municipal Corporations—Changing Boundaries

In re Sanitary Board of East Fruitvale Sanitary District.—There cannot be at the same time within the same territory two distinct municipal corporations, exercising the same powers, jurisdiction and privileges. Generally, where one municipal corporation is annexed to another, the annexing city takes over the functions of the other, which by virtue of the annexation is extinguished, and its properties, powers and duties are vested in the corporation of which it has become a part. In the absence of constitutional restriction, the Legislature has absolute power over the organization, dissolution, extent, powers and liabilities of municipal and other public corporations established as agencies of the State for purposes of local government. The effect of enlarging or diminishing the boundaries or of consolidating or annexing municipal corporations is governed by legislative intent. Where a question on appeal can be decided without challenging the Legislature's power in a given particular, that course will be followed. A sanitary district, formed under St. 1891, is extinguished and dissolved on annexation of its territory to an adjacent municipal corporation. Bond proceedings, pending in a sanitary district formed under St. 1891, c. 161, on its dissolution by annexation to a city, fall, and any further steps to construct sewers in the territory must be initiated and conducted by the city. Act April 21, 1900 (St. 1909, c. 673), expressly authorizes creation of separate sewer districts within municipalities.—Supreme Court of California, 111 P. R., 368.

Title to Ponds

Conant et al. v. Jordan et al.—Under the common law of the State, based in part upon the Colonial Ordinance of 1641-47 of Massachusetts, and in part upon the usages and customs of the early inhabitants, the title to all great ponds containing more than ten acres is in the State for the use of the public. The public have the right of free fishing and fowling upon Great Pond in Cape Elizabeth, which contains more than ten acres, although the territory in which the pond is situated was held in private ownership as early as 1631 and has so continued until the present time. The common law of England has never been in force in this State except as far as it has been adopted in the usages and customs of the people. The doctrine of the English common law respecting private ownership of ponds has never been recognized nor adopted in this State, so far as ponds of more than ten acres are concerned, and fishing and fowling upon them have been free from the beginning. Any pond containing more than ten acres is a "great pond" within the Colonial Ordinance of 1641-47, forbidding appropriation of great ponds to any particular person or persons.—Supreme Judicial Court of Maine, 77 A. R., 938.

Street Railway Franchise—Paving Tracks

Crawford County Street Railway Co. v. City of Meadville.—Where a street railroad company under an ordinance paid a city money as a condition to the granting of a franchise, and also paid another sum to cover the estimated cost of paving displaced if the company's tracks should be laid in a paved street, the sum deposited for repairs would become the property of the city only after the company had laid its tracks in paved streets, and upon expiration of the franchise without user could be recovered by the railway company in assumpsit. The money paid to cover the cost of paving displaced being held on deposit, limitations would not begin to run against its recovery until some act of conversion by the city.—Supreme Court of Pennsylvania, 77 A. R., 928.

Sidewalk Improvements—Liability of City

Ward v. City of Lincoln.—Lincoln, a city of the first class, entered into a valid contract for the construction of a sidewalk, the cost thereof to be paid by a special assessment to be levied on the lots abutting the improvement. The sidewalk was constructed according to the contract and the city levied a special assessment upon the abutting lots to pay for the same. Thereafter the city failed and neglected to collect the assessment, and entered into an agreement with the owner of the lots by which it attempted to release them from the lien of the special assessment, and caused the same to be canceled and discharged of record. Held, that such conduct on the part of the city rendered it liable in an action to recover the contract price of the improvement.—Supreme Court of Nebraska, 128 N. W. R., 24.

NEWS OF THE SOCIETIES

Engineering Association of the South—The annual convention of the association met at the Chamber of Commerce Auditorium, Birmingham, Ala., November 21. Sight-seeing trips were made to Ensley, Corey and other points where the works of the Tennessee Company are located. A banquet was given at the Country Club in the evening. Officers of the association were elected several months ago. R. H. Elliott is president of the Birmingham branch. The committee on arrangements for the present convention included W. F. Thornton, A. V. Gregory, J. G. Armes and J. A. Yates.

Iowa Good Roads Association—A meeting of the association will be held December 28, at Des Moines, to confer on a program of legislation to be presented to the Iowa Legislature which meets next January. The objects which the association especially desires to further are:

State supervision through Iowa Highway Commission and competent county road supervisors over all highway work.

The segregation of a stated portion or per cent of the township road funds for compulsory dragging.

The replacement of wooden culverts with concrete waterways.

Uniformity in road grading.

More efficient drainage.

The passage of all bridge contracts through the hands of the Highway Commission for final approval before letting.

The appropriation of ample funds for the use of the Highway Commission to perform the duties for which it was created.

The association also desires some improvements in the new Iowa statutes providing for the establishments of road districts for the building of so-called permanent highways. The question of state aid in building and maintaining roads is also to be worked out, but will probably be side-tracked temporarily, all efforts of the state association being directed for the immediate present to obtaining legislation which will bring immediate relief in the matter of road improvement to all the people in all quarters of the state and which will at once center the efforts of all road work and expenditures upon careful grading, good drainage and intelligent dragging.

National Electric Light Association, Eastern New York Section—At a meeting at Schenectady, November 21, this section was organized with 140 members. The members of the section decided to take the initiative in a movement which has been talked of for some months to build an engineering building for the use of scientific and engineering societies of Eastern New York. At the meeting, over which Bryce E. Morrow of Schenectady presided, were present M. Webb Offutt, manager of the Schenectady Illuminating Company; T. A. Kenney, treasurer of the local section; C. D. Haskins, manager of the lighting department, General Electric Company; F. H. Gale, in charge of advertising; M. O. Troy, manager of transformer sales, and R. H. Carleton, secretary pro tem of the new section.

Good Roads Association of Oregon—Arrangements are being made by Chairman Webster of the association for calling a convention to outline the procedure in view of the recent passage of constitutional amendments which enable the counties to issue bonds for road work.

Pennsylvania State Firemen's Association—The thirty-second annual convention will be held in York, Pa., during the first week in September, 1911.

Municipal Art Society of Hartford, Conn.—The sixth annual meeting of the society was held November 22 in the Center church parish house, Edwin Knox Mitchell, the president, presiding.

President Mitchell presented his report, in which he said that the society had been one of the agencies to help bring about desired improvements in civic affairs, and if there was ever a reason for the existence of the organization it was now. The society, the president said, is devoted to the out-of-door art interests of the city, and whatever is out of doors belongs, in a sense, to the people. We are all members of one great municipal household, he said, and Hartford is a fair city, one of the fairest in the country. An expert, he cited, after looking things over reported that Hartford came within 30 per cent. of being the ideal town. One of the first things to be attempted is to give the state capitol a central position, and the armory and the new library should be wedded to it. The opening up of one or two more avenues westward is likewise a matter of immense importance, the president said. He reported that there are now 337 members in the club, of whom twenty are life members.

Walter S. Schultz, chairman of the street committee, read a report suggesting suitable standards for electric lights about the city, and he further suggested that a prize be offered by the society for the best design submitted. He touched on the increasing needs of the isles of safety. Mr. Schutz urged that the telephone and telegraph companies be compelled to place all their wires under ground so that the trolley feed wire may be gotten under ground. If the company was not far-sighted enough to see the advantage of so doing its vision might be improved by legislation. The signs put up a year ago on Asylum street which indicate the numbers from one block to the other have stood the test of the weather. They are cheaper than the iron signs and wear as well, barring juvenile strenuosity.

Charles Noel Flagg offered two resolutions as follows, and they were accepted:

Resolved, That in an effort to protect the city from the embarrassment of bad statuary, commercial monuments, etc., and to care for such worthy works of art as are now possessed by the city, the Court of Common Council be asked to consider the advisability of creating a competent art commission, whose judgment can be relied upon and accepted as final in all questions of civic art; and

Resolved, That the City Plan Commission be asked as to the advisability of its drafting a plan of an ordinance which shall have for its object the limiting of the height of buildings facing the parks, open spaces and thoroughfares throughout the business section of the city, for the consideration of the honorable Court of Common Council.

Chamber of Commerce, Erie, Pa.—Details of the proposed movement for securing a comprehensive plan for the civic improvement of Erie, covering a period of approximately the next 50 years, were outlined at an informal dinner given at the Erie club last week by James M. Sherwin, the guest of honor being John Nolen, of Cambridge, Mass. After the dinner the subcommittee, Max C. Currick, chairman, John T. Brew, William Hamilton, Matthew Griswold, Jr., and Joseph M. Force, met with Mr. Nolen and discussed several propositions regarding the project. The committee eventually decided to inaugurate a campaign to raise the sum of \$5,000 needed for the purpose.

Western Pennsylvania Public Health Conference—The conference was opened at Memorial Hall, Pittsburgh, November 29, with Dr. William H. Mears in the chair and Dr. E. R. Walters, Director of the Pittsburgh Health Department, made an address of welcome. He said that in Germany, where sanitary science had reached its highest development, human life had been prolonged 27 years as compared with its duration in countries where little was known of preventive work. In the United States sanitation was adding about half as much as in Germany. Dr. Richard C. Cabot, Boston, Mass., spoke of the functions of dispensaries and curative and preventive work in hospitals. Dr. S. E. Goldstein and Francis J. Tonance spoke of the conditions in local hospitals. Dr. Samuel G. Dixon, State Commissioner of Health, spoke on the value of fresh air. Nursing, hospital co-operation, and efficiency and finance were the subjects of the second day's discussions. The speakers were State Senator William Flinn, R. J. Leonard Levy, John Mann, William H. Allen, of New York, and Miss Adelaide Metteny, New York. Senator Flynn advocated the pay system in public hospitals, saying that the profits from pay patients would go far toward taking care of the poor ones.

Civic Club of Allegheny County, Pa.—At a meeting in the club rooms, November 23, Mayor William A. Magee spoke of public utilities and rapid transit facilities. He said that he believed power should be given to cities and counties to erect self-supporting utilities without the restriction of the 7 per cent debt limit. Edward M. Bigelow told of the intention of the tree commission to plant trees along every street in the city. William Solotaroff, secretary and superintendent of the shade tree commission, East Orange, N. J., gave an illustrated lecture on the municipal control of shade trees. The following officers were elected for the ensuing year: President, William M. Kennedy; first vice-president, Mrs. Franklin J. Iams; second vice-president, Oliver McClintock; third vice-president, Cornelius Scully; fourth vice president, Robert C. Hall; treasurer, Mrs. William Thaw, Jr.; secretary, Miss H. M. Dermitt.

Wilmington, Del., Civic Association.—About seventy-five business men of Wilmington, Del., met November 21st in the rooms of the Board of Trade and organized the Civic Association, with the avowed object of bringing about a better form of city government. The following officers were elected: President, Herbert H. Ward; vice-president, J. Harvey Whiteman; secretary, Arthur L. Balley; five members of the executive committee, T. Allen Hilles, R. H. Richards, A. D. Warner, C. E. Burchenal and George B. Miller.

Fortnightly Club of New Britain, Conn.—A regular meeting of the club was held November 22d at Superintendent Stanley H. Holmes' office in City Hall. City Engineer F. L. Ford, of Hartford, gave an illustrated lecture on "The City Beautiful." Mr. Ford recently returned from a trip abroad, where he was very observing of European cities which could be really called beautiful. The result of Mr. Ford's observations was thrown on the screen with a stereopticon lantern and proved very interesting to the members of the club. In all over two hundred views of cities were shown.

New England Water Works Association—The monthly meeting will be held at Hotel Brunswick, Boston, Mass., December 14. On invitation of Dexter Bracket, Chief Engineer, there will be an excursion to the Chestnut Hill Pumping Stations of the Metropolitan Water Works. The following papers will be presented: "Water Filtration Plant at Newport, R. I.," by Robert E. Milligan, manager of the N. Y. Continental-Jewell Filtration Company; "Some Difficulties in the Purification of Water Supplies," by Dr. Gardner T. Swarts, Secretary of State Board of Health of Rhode Island; "The Panama Canal," Illustrated, by Louis K. Rourke, Superintendent of Streets, Boston, Mass.

Federation of Citizens' Associations of Washington, D. C.—By a unanimous vote a special committee of the Federation of Citizens' Associations last week decided to recommend that the powers of a public service commission be conferred upon the Commissioners. The meeting was held at the Octagon House. A bill will soon be framed by a sub-committee composed of William McK. Clayton, Allan Davis and J. Rush Marshall, vesting the District's heads with authority to regulate lighting and street railway rates, determine upon franchises of corporations, bond issues, increased capitalization, etc. The measure will also provide an appropriation of \$25,000 to cover the expenses of the Commissioners in exercising their new prerogatives and to pay for expert counsel.

New England Playground Institute—A conference will be held in Holyoke, Mass., December 8-10, and 200 delegates are expected. Miss Ellen LeGarde, general director of the Holyoke playgrounds, will have charge of the programs of Friday and Saturday afternoons. The Holyoke workers and Holyoke children and the development of the Holyoke playground system will play a prominent part throughout the entire session. The program is as follows:

Thursday, December 8, 8 P. M., High School Hall.—Open Meeting, "What the Child Needs," Joseph Lee, president of the Playground Association of America. "Playgrounds and Health," John J. Cronin, M.D., Dept. of Health Division of Child Hygiene, New York City.

Friday, December 9, 9 A. M., Public Library Hall.—Institute Session. "A City Plan for Playgrounds and Public Recreation," Howard Bradstreet, director of parks and playgrounds, New York City. "Afternoon and Evening Recreation Centers in Public School Buildings," Miss Ruth A. Harper, director of the Evening Recreation Center, Public School 63, New York City. 2 P. M., Public Library Hall.—Institute Session. "Playground Equipment," speaker to be announced. "Playground Activities for Children under Ten Years of Age," Miss Ellen LeGarde, Director of Physical Training in Public Schools of Providence, R. I. 8 P. M., Residence of Mrs. Wm. G. Dwight, 166 Elm street, Holyoke, Mass.—Institute Session. Reception. Local committee in charge.

Saturday, December 10, 9 A. M., Public Library Hall.—Institute Session. "Playground Activities for Boys from Ten to Fifteen Years of Age," J. H. McCurdy, M.D., Y. M. C. A. Training School, Springfield, Mass. "Playground Activities for Girls from Ten to Fourteen Years of Age," Miss Beulah Kennard, President of the Pittsburg Playground Association. "Boy Scouts and Girl Scouts," Arthur A. Carey, Settlement of Waltham, Mass. 2 P. M., Public Library Hall.—Institute Session. "Demonstration, Teaching Games and Folk Dances," Miss Ellen LeGarde, Director of Physical Training, Public Schools, Providence, R. I. Question Box. 8 P. M., High School Hall.—Open meeting. "Recreation Use of School Buildings for Working Boys and Girls," Edward W. Stitt, Director of Playgrounds and Recreation Centers, Board of Education, New York City. "Use of Leisure," Joseph Lee, president of the Playground Association of America.

Municipal League of Eugene, Ore.

This league has been recently organized with 50 members. The officers are: President, Professor F. G. Young; vice-president, Rev. W. B. Pinkerton; secretary-treasurer, H. E. Holmquist. These officers, together with Dr. F. W. Comings and Dugald Campbell, constitute the executive committee of the organization. One purpose of the league is to investigate fully the conditions pertaining to all phases of the life of the community and to report the findings to the public. Other objects are to co-ordinate the different agencies which are at present engaged in the civic betterment of Eugene, and to effect such improvement in common welfare as seems feasible. In order to carry on this work the by-laws of the league provide for 10 commissions. These will effect their own organization, will work only in their particular spheres and will report their findings to the league. The commissions provided for are: Public utilities; municipal organization; finance and accounting; sanitation and public health; streets, parks, playgrounds and plans for the future city; recreation and moral welfare; education, schools and libraries; public order and safety; charities and corrections, and civic cooperation.

Municipal Art Society of Baltimore—The directors of the society were entertained at dinner November 21st by Theodore Marburg, president of the society, in honor of the passage of the loan for the covering of Jones' Falls, which project the society primarily placed before the people of Baltimore. Mayor Mahool was one of the guests, as was also Jean Pierre Laurens, son of Jean Paul Laurens, the French historical painter, whose large murals are now being installed in the Courthouse. Prof. W. Ely of Wisconsin was also present. The affair was informal and addresses were made, the Falls' proposition naturally coming in for the lion's share of the discussion. Of the small amount of business which was transacted, the adoption of a resolution for the appointment of a nominating committee to form the official slate for the ensuing year was the most important feature.

Calendar of Meetings

- December 7.**
American Society of Civil Engineers.—Regular Meeting.—C. W. Hunt, Secretary, 220 West 57th street, New York.
December 7-9.
American Institute of Chemical Engineers.—Annual Meeting, New York, N. Y.—J. C. Olsen, Secretary, Polytechnic Institute, Brooklyn, N. Y.
December 8-10.
Playground Institute.—Meeting, Holyoke, Mass.
December 12-14.
Association of American Portland Cement Manufacturers.—Annual Convention, New York, N. Y.—Percy H. Wilson, Secretary, Land Title Building, Philadelphia, Pa.
December 12-23.
National Association of Cement Users.—Annual Convention, New York, N. Y.—Richard L. Humphrey, President, Harrison Building, Philadelphia.
December 14-16.
American Civic Association.—Annual Meeting, Washington, D. C.—Richard B. Watrous, Secretary, Washington, D. C.
December 20-21.
Minnesota Good Roads Association.—Annual Meeting, St. Paul, Minn.
December 27.
American Association for the Advancement of Science.—Annual Meeting, St. Paul, Minn.—L. O. Howard, Secretary, Smithsonian Institution, Washington, D. C.
December 27-28.
American Society of Agricultural Engineers.—Annual Meeting, Lafayette, Ind.—E. W. Hamilton, Secretary, Iowa State College, Ames, Ia.

December 27-30.

American Statistical Association.—Annual Convention, St. Louis, Mo.—C. W. Doten, Secretary, 491 Boylston street, Boston, Mass.

January 2-6.

Canadian Society of Civil Engineers.—Annual Meeting, Winnipeg, Manitoba, Can.—C. H. McLeod, Secretary, 413 Dorchester street, West, Montreal, Que.

January 12-14.

Montana Society of Engineers.—Annual Meeting, Helena, Mont.—Clinton H. Moore, Secretary, Leysen Block, Butte, Mont.

January 12-14.

National Civic Federation.—Annual Convention, New York, N. Y.—D. L. Case, Secretary, 1 Madison avenue, New York, N. Y.

January 12-14.

Indiana Engineering Society.—Annual Meeting, Hotel Denison, Indianapolis.—Charles Brossman, Secretary, Union Trust Building, Indianapolis, Ind.

January 16-20.

Canadian Cement and Concrete Association.—Annual Convention and Exhibition, Toronto, Ont.—R. E. W. Hagarty, Secretary, 662 Euclid avenue, Toronto, Ont.

January 17.

Engineers' Society of Western Pennsylvania.—Annual Meeting, Pittsburgh, Pa.—Elmer K. Hiles, Secretary, 803 Fulton Building, Pittsburgh, Pa.

January 17-19.

American Institute of Architects.—Annual Convention, San Francisco, Cal.—Glenn Brown, Secretary, Octagon, Washington, D. C.

January 18-19.

American Society of Civil Engineers.—Annual Meeting, New York.—C. W. Hunt, Secretary, 220 W. 57th street, New York.

January 24-26.

Ohio Engineering Society.—Annual Meeting, Columbus, O.—C. J. Knisely, Secretary, New Philadelphia, O.

January 25-27.

Illinois Society of Engineers and Surveyors.—Annual Meeting, East St. Louis, Ill.—E. E. R. Tratman, Secretary, 1636 Monadnock Block, Chicago, Ill.

February 6-11.

National Brick Manufacturers Association.—Annual Convention, Louisville, Ky.—T. A. Randall, Secretary, Indianapolis, Ind.

May 29.

American Water Works Association.—Annual Convention, Rochester, N. Y.—J. M. Diven, 14 George street, Charleston, S. C.

PERSONALS

ARMSTRONG, A. E., Albany, N. Y., Chief of the Bureau of Research of the New York State Department of Highways, Presented a paper before the Albany, N. Y., Society of Civil Engineers November 22 on "The Testing of Road Materials."

DAVIS, W. D., Fort Worth, Tex., has been elected Mayor. The following Commissioners were chosen: Jim Allen; W. J. Galvin, J. H. Maddox, Lee Stephens, John F. Grant.

FLYNN, JOHN, JR., Troy, N. Y., has been appointed Special Deputy City Engineer in charge of the preparation of plans and specifications and of the construction of the new storage reservoir on the Quackenkill for the city of Troy, N. Y.

EDDY, HARRISON P., Boston, Mass., has been retained by the Sewerage Commission of Fitchburg, Mass., to investigate and report on the city's sewage disposal problem.

NUNN, CAPT. HERBERT, El Paso, Tex., has resigned his position of County Engineer and has entered the city service as an Assistant Engineer. Charles Whitmore succeeds to his position in the county.

O'CONNOR, WILLIAM J., Chief of Police, New Orleans, La., died November 29; he had been connected with the police Department for forty years.

RAUB, FRANK H., Civil Engineer, of Easton, Pa., has been elected City Engineer to fill the unexpired term of City Engineer McNeal, who resigned to go to Columbia, S. C., as City Engineer.

TRADE NOTES

Cast Iron Pipe—Chicago: Improvement in the municipal bond market is a favorable indication for the pipe trade during the coming year. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham: No orders of consequence have been placed of late, but producers are hopeful regarding business after the first of the year. Quotations: 4 to 6-inch, \$20.50; 8 to 12-inch, \$20; over 12-inch, \$19. New York: The general demand is better than usual at this time of the year. More contracts are being placed for spring delivery. Competition is sharp for immediate delivery. Quotations: 6-inch, carload, \$22.

Lead—Quotation: New York, 4.50c.; St. Louis, 4.40c.

Gas Company Improvements—When the work now under way has been completed, the Rochester Railway & Light Company this year will have laid more than 28 miles of gas mains at Rochester, N. Y. Heretofore the mains have been for most part 4-inch. This year there has been laid 7,000 feet of 16-inch main, 8,200 feet of 12-inch, 7,100 feet of 8-inch, and 9,300 feet of 6-inch. Only 3,200 feet of 4-inch main has been laid this year. The cost of installing the mains will be in excess of \$100,000.

Auto Fire Truck—The new automobile fire truck for the use of the Valley Falls, R. I., Fire Department has arrived. The new truck will carry 1,000 feet of regular hose, three ladders and the other necessary equipment for fire-fighting, such as axes, bars and other tools, besides two chemical tanks with a capacity of 35 gallons each, two pony tanks and 250 feet of chemical hose. The machine was built by the Seagrave Manufacturing Company of Columbus, O., and was purchased through the agency of the Combination Ladder Company of Providence.

Auto Chemical Engines—The Wilmington Brass Company, Third street, Wilmington, Del., is now making three auto chemical engines, one for the Water Witch Company of Wilmington, one for Robeson, Pa., and one for Cynwyll, Pa. The automobile engines and frames are furnished by other companies and the Wilmington company installs the tanks and other equipment to complete the apparatus.

Luminous and Flame Arcs vs. Open and Enclosed Carbon Arcs for Street Illumination—The General Electric Company has recently issued a pamphlet which is a reprint of the paper read before the National Electric Light Association on the subject of "Street Illumination." This pamphlet compares the results obtained from the use of luminous and flame arcs with those resulting from the use of open and enclosed carbon arcs. The subject is treated from the standpoint of the illuminating engineer and is discussed in detail. The pamphlet contains half tone illustrations showing street illumination by luminous arcs in various cities. There are also numerous diagrams. The conclusion summarized is as follows: One of the strongest features of the present condition of the arc is that we now have available three high efficiency units which can be operated in series on the same circuit. The 6.6 ampere Luminous arc for lighting the principal streets; the 6.6 Boston flame arc for lighting public squares and other open places; the 6.6 ampere Mazda unit for residential and incidental lighting.

Street Car Equipment—The Public Utilities Commission of Quebec Province has issued an order requiring the Montreal Street Railway Company to refrain from putting any more single truck cars in use; to reduce the number of those it has in use by 50 every year; to equip with air brakes all cars 30 ft. or more in length and weighing not less than 25,000 lbs.; to equip with emergency brakes all cars on routes with severe grades; to equip all cars with automatic mechanical drop wheel guard of Hudson & Browning type or similar; to remove the fenders after cars have been so equipped, the tripping gate also to be placed not more than 6 in. from the ground, and the apron of the wheel guard not over 5 in. The portion of the order respecting wheel guards and brakes is to apply to all electrical railways and tramways in the Province.

Cameron Pumps—It is announced that the business of the A. S. Cameron Steam Pump Works, which was recently taken over by the Ingersoll-Rand Company, 11 Broadway, New York, will be conducted as a separate enterprise, and to that end the Cameron Company has been incorporated. No change will be made in the policy of the company nor will any immediate change be made in the line of manufacture. The incorporators declare that the affairs of the Cameron Company will not be merged with those of the Ingersoll-Rand Company beyond that the latter organization will control the new corporation's stock. The Cameron Company elected the following officers: President, George Doubleday; first vice-president and treasurer, W. R. Grace; second vice-president and general manager, George W. Fuller; secretary, F. A. Brainard. All of the above named and W. L. Saunders, president of the Ingersoll-Rand Company, and Joseph P. Grace are directors.

Wire Rope—A. Leschen & Sons Rope Company, 920 North First street, St. Louis, Mo., have issued a folder devoted to the Hercules wire rope, which is made in a dozen styles, divided and classified under the general types of patented flattened strand and round strand. The wire of which this rope is made is drawn and tempered by a secret process which is claimed to have perfected wire rope manufacture and for purposes of identification one strand of the rope is painted.

Sewer Appliances—The Boston Hook Sewer Rod Co., 1616 Locust street, St. Louis, Mo., and 415 Dorchester avenue, Boston, Mass., issue a folder illustrating the strong points of their sewer rod on one side of the page and describing the Stewart patent sewer cleaning machines on the other.

Cement—The monthly bulletin of the Universal Portland Cement Company, Chicago, Ill., for November carries an illustration of the concrete water tower at Gary, Ind., on the front cover.

Wadsworth Macadam—The Wadsworth Stone & Paving Co., Pittsburg, Pa., publish a booklet describing and illustrating their method of paving, which consists in the use of Kentucky rock asphalt for a top dressing in the place of stone screenings commonly used. The pavement is waterproof, smooth and durable under ordinary highway conditions.

New Lighting Plant—The New Egypt Electric Light, Heat, Power & Water Company, after several months' work, has finished one of the finest power plants in Pennsylvania.

Taylor Water Works Contest—As a counter move against the action of the city of Taylor last week, when the City Council, by resolution, revoked the franchise of the Taylor Water Company, and announced procedure in the Twenty-sixth Judicial District Court of Williamson County for the appointment of a receiver for the water company, the bondholders of the Taylor Water Company have filed suit against the city of Taylor in the Federal Court at Austin for the appointment of a Federal receiver for the Taylor Water Company, and an injunction against the action of the city in the District Court. City Attorney W. A. Barlow will file suit in the District Court at Georgetown against the Taylor Water Company for the annulment of the water company's franchise and the appointment of a receiver for the same in obedience to the resolution previously adopted by the City Council. With action pending in both the State and Federal courts for the appointment of a receiver for the water company, the legal contest bears similarity to the famous suit of the State vs. The Waters-Pierce Oil Company in the State and Federal courts last year. However, if this legal battle continues for any length of time the city of Taylor may ultimately hold the whip in that the existing contract between the city and the Taylor Water Company will have expired next spring, before a new municipal Council shall have been chosen.

Paving Brick Rejected—Barr brick, manufactured at Streator, are not in as high repute in Ottawa as they were last year. Contractor Weintert, who has a contract for paving Paul street, has had a great many brick condemned on account of their bad shape. Some of the brick have varied half an inch in width, it is stated, so that they cannot be laid in straight courses. The trouble is attributed to the use of worn-out molds.

New Ditching Machine—Levi Thorvelt, Moland, Minn., has made a model of a ditching machine of which great results are expected. James Kennedy, one of the largest contractors in North Dakota, is providing the money for the experiments. The feature of the machine is its simplicity and the fact that it can be readily moved from place to place. It is operated by a small gasoline or steam engine and works by a system of cranes and chains. There are two cranes, each of which holds a scraper, and is easily controlled by means of chains, from the engineer's seat. One of the scrapers digs the dirt out and piles it up, while the other is kept constantly lowering this pile.

The Mixer—Under this caption the Koehring Machine Co., Germania Building, Milwaukee, Wis., manufacturers of Koehring concrete mixers, publishes a booklet intended to amuse prospective customers and put them in a receptive mood for further information. Pages of short stories and humorous sayings alternate with photographs of the Koehring mixers and the plant where they are made.

Filbertine—An advertising button in red and yellow, which is commonly worn by their employees, has been gotten up by the Filbert Paving and Construction Co., Pennsylvania Building, Philadelphia, Pa. The word "Filbertine" is conspicuous in red letters on a yellow scroll. Those who look closer may see that Improved Waterproof Paving Cement is the material to which the name is given.

MUNICIPAL APPLIANCES

Velvetlawn Grass Seeder

GRASS seeders, both hand and horse drawn, suitable for municipal purposes, are made by the Velvetlawn Seeder Co., Springfield, O. The hand machine is useful in renovating grass plots, or boulevards as they are called in some cities, between the curbing and flag or cement sidewalks. Many miles of these grass plots are sodded yearly in many cities, particularly in the west. Just what is done by the city for their maintenance is uncertain, probably in most cases nothing, but the need for it is apparent enough. The hand machine can be used to cut up the old sod and reseed in bare spots and around trees and posts where a horse machine would not be effective. For renewing the grass in parks or large open spaces the horse machine will do effective and economical work. The machine combines the features of a disc harrow, adapted for lawn work, and a seeder. The discs are set at a slight angle to the line of draft so that one horse can pull it. The boots are placed directly under the axle of the disc so that the seed enters the furrow at the deepest and widest point. The discs cultivate the soil and pulverize it more than an ordinary harrow, making a finer seed surface. It sows a strip four feet wide. Each disc and boot has independent action and therefore conforms to the inequalities of the ground. The shifting device automatically changes all the force feeds at the same time. Discs are only three inches apart, experience having shown that less seed and a larger number of furrows produce the best results. The cutting action of the discs improves the dormant sod and cultivates the grass roots.

The same company makes a fertilizer sower which is specially adapted for sowing fertilizer and seed around shrubbery in parks and other places. This is a hand machine.



MACHINE FOR RENOVATING AND SEEDING PARK LAWNS

Coupling-Expander and Hose-Testing Machine

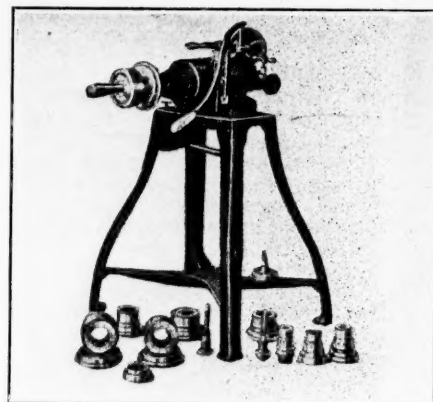
THE Buckley hydraulic coupling-expander and hose-testing machine, made by the Larkin Manufacturing Company, Dayton, O., is meeting with much approval. Several of the large rubber manufacturers are using this tool for attaching couplings to fire, mill and suction hose, and many chiefs have added one to the equipment of their departments. This expander automatically attaches couplings to all sizes of hose, from $\frac{3}{4}$ to 8-inch. It makes the work sure, since there is a scale to be used which instructs the operator as to the proper pressure, so that there shall be no mistake about the coupling being properly attached, thus preventing blow-offs, etc. After the coupling has been attached, the hose can be tested, and, in fact, the machine can be used at any time to test new or old hose. Being a first-class tool and the first improvement in that line for many years, it is well worth the consideration of any department having couplings to attach. It is furnished either as hand, or electric-motor-driven.

Report on Pumping Engine

Percy M. Blake, of Boston, consulting engineer of the Pawtucket, R. I., water works, has submitted an interesting report regarding the work of the new pump which was constructed by the R. B. Woods Company and which, after almost a year of service has been accepted. Mr. Blake's report, in part, follows:

Isaac Gill, Commissioner of Public Works, Pawtucket, R. I.:

Dear Sir—The high duty, vertical, triple expansion flywheel pumping engine, constructed and erected at Pumping Station No. 1 by the Camden Iron Works of Camden, N. J., under contract with the city dated Jan. 24, 1907, after running in service for several months, was thoroughly



BUCKLEY HYDRAULIC COUPLING EXPANDER

tested for efficiency under your direction in September last, and the results of the test have been studied and are now understood. The new boiler plant, with its appliances and connections through which steam is furnished for the new engine, was included in the test. The engine was specially designed for the requirements and service of the city, as was the boiler plant, and the following summary of results of the test are interesting.

The engine was designed to pump 11,000 gallons per minute (15,000,000 gallons per 24 hours) from pump well to reservoir and through the city mains; the rate of pumping was slightly in excess of this requirement.

The engine ran smoothly and at an even piston speed, and the water pressures to be overcome agreed very closely with those based upon the elevations and friction allowances furnished by Mr. Carpenter, City Engineer.

The contractor guaranteed the engine to perform a duty of 160,000,000 foot-pounds for each 1,000 pounds of steam passed through the engine and its auxiliaries, and the test showed a performance of 172,000,000, an excess of 12,000,000, for which the contractor was entitled to be paid, in addition to the contract price, \$3,600, or at the rate of \$300 per million foot-pounds. This performance exceeds that so far recorded of any engine of the same class and size yet constructed.

The average steam pressure, furnished by the boilers at the throttle valve of the engine during the test was 159 7-10 pounds. The average vacuum was 28 $\frac{1}{2}$ inches.

Pressure in force main, 118 38-100 pounds.

Vacuum in suction pipe, 5 91-100 inches.

Gain in efficiency by use of economizer (boilers only), 4 3-10 per cent.

Total power produced in steam cylinders, 871 85-100 horsepower.

Power measured in plungers, 838 3-10 horsepower.

Loss, in friction, 3 84-100 per cent.

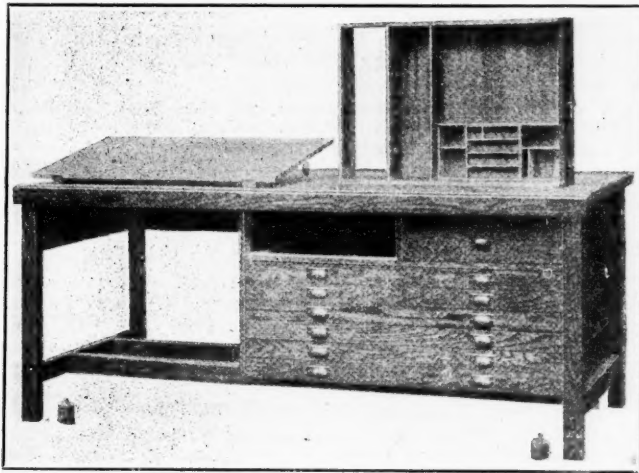
Some of these results have largely a technical value, but all the results taken together and understood mean that the efforts of the contractor, the Camden Iron Works, have in this case succeeded in providing an engine of the highest class of its type. The test also indicated that the efforts made in the designing and construction of the boiler plant and other features in connection with this plant and the engine have secured to the city a pumping plant capable, as a whole, under an intelligent, skillful and faithful management, of performing the work required of it at an operating cost equal to that of the best steam pumping plants in the country. It was understood and intended by your department that superior results should be obtained for the expenditure of the large sum necessary to provide and equip this pumping station, and to this view and the full co-operation and support of the department the results are to be credited.

Engineer's Table and Filing Case

A DRAWING, reference table and filing case combined, designed for the use of engineers, is made by the Economy Drawing Table Co., Toledo, O. The loose inclined board can be shifted about on the table to suit the light and the desire of the draftsman. The loose board can be set aside at any time and another piece of wood taken up. It is light and easily handled and the inclination, which can be altered, is suitable for most cases. To hold down and keep drawings and papers from catching when pulling out the drawers, holding-down wires, 10 inches long and $4\frac{1}{2}$ inches wide, are used. The detailed description of the table follows:

Top, soft pine, 39x84x1 $\frac{1}{2}$ inches. Table 34 inches high.

Two small drawers, 21x24x4 inches inside, in two compartments, 18x21 inches and 6x21 inches.



ECONOMY REFERENCE TABLE AND FILING CASE

Six large drawers, 32x44x2 inches inside. These drawers have a 6-inch lid at top and back of drawer to prevent drawings from slipping out.

Set of four raising blocks, 1, 2 or 3 inches high to adjust the height of table. The dowel of the raising block fits into a dowel hole in the bottom of the leg.

Material, oak, except top. Finish, natural oak, three-coat, dull, rubbed smooth finish. Antique, golden, Flemish or weathered oak.

Sand Fire-Extinguishing Equipment

A SAND fire-extinguishing equipment, which should prove very useful in motor garages, both public and private, has recently been introduced by Merryweather & Sons, of Greenwich, England. It comprises a three-wheeled sand truck, constructed of stout galvanized sheet steel, and holding about 6cwt. of sand. The sand can be taken from the top, hinged covers being provided to open from either end, or it can be shoveled into a bucket from the side, in which a sliding panel is fitted. When the sliding panel is raised, a peg is inserted in a hole in the side of the truck to prevent the panel from dropping down. A fibre bucket is carried on a bracket at the back, and two strong wooden spades are supported on suitable iron brackets at the side. In another form the sand bin is of larger capacity (holding about 8cwt. of sand) and is mounted on legs instead of wheels. It is equipped with two fibre buckets and two spades, and has a hinged cover at the top and a sliding panel at the side.

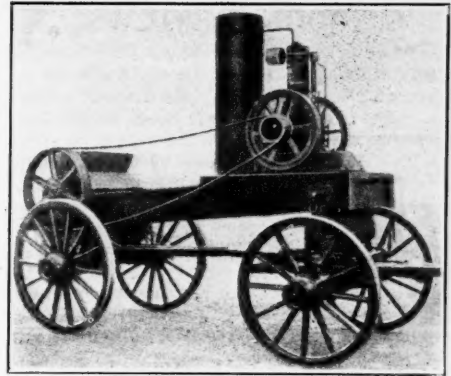
Maney Four Wheel Scraper

THE Maney scraper, manufactured by the Baker Mfg. Co., 748 Fisher Building, Chicago, Ill., is an earth excavating appliance designed to possess the advantages of a scraper in that it is self-loading; a wagon, in that it carries a load of sufficient size to permit hauls of ordinary length for wagons; a spreader, in that the driver automatically controls the discharge of the load. Moreover, in making earth fills that require compacting, as in dams, it has the advantage that the wide tires do not track, and much of the effect of a steam roller may be secured without expense.

The scraper itself is carried by a four-wheeled steel truck of substantial construction. The front wheels are 30 inches in diameter and the rear wheels 48 inches. The front wheels cut under to permit short turns.

The scraping pan is 45 inches wide, 25 inches deep and 46 inches long. A seat at the rear where he controls the operations is provided for the driver. Above the wagon frame is a shaft from which the pan is suspended by chains and a yoke at the front. The illustration shows the scraper adjusted to pick up a load. It is ordinarily drawn by two horses, but is strong enough to stand the pull of a hitching team if one is needed. When the pan has taken its load of 29 cubic feet the driver throws in a clutch, which, through sprockets on the rear axle and on the

shaft above the frame and chains, elevates the pan so as to clear rough ground. An automatic trip throws the clutch on the axle out of gear, stopping the winding and preventing the machine from becoming spool bound. When the dump is reached the back of the pan, which is practically an end gate, is thrown back and the dirt discharged. The Maney scraper has been successfully used for snow removal in New York on streets where the hauls are short—near the docks and where the snow has been dumped into sewers.



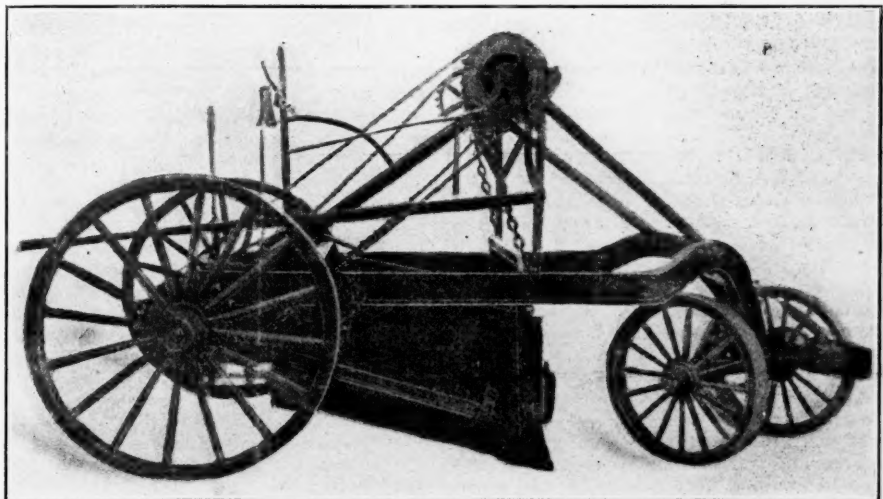
DISINTEGRATOR FOR LUMPY ASPHALT MIXTURES

Machine for Breaking Up Lumpy Asphalt Paving Mixtures

MUCH trouble is experienced in cold weather by the packing together and cooling of the asphalt mixture in wagons when being hauled to the work. The result is expense for labor, breaking of the lumps, loss of material which cannot be broken up fine enough and poor work because the steam rollers may not be able to press the lumps down and roll them so that they will amalgamate with an unbroken surface. A portable device made by the Belle Isle Disintegrator Co., Detroit, Mich., has been successfully used for this purpose in disintegrating Kentucky rock. The machine used for this purpose, or a slight modification of it, should be valuable in laying the various bituminous mixtures now so generally used in road work. The machine is simply a wagon carrying a gasoline engine in front and a pug-mill with suitable teeth at the rear. The machine is commonly used in laying Wadsworth macadam.

Automatic Valve for Fire Steamers

AN automatic valve which has been installed on the steamer at No. 2 engine house on North Wittenberg avenue, Springfield, O., was recently given a satisfactory test. The valve is automatic in operation so that the firemen can, by shutting off the nozzle also shut down the engine. By reopening the nozzle the engine will be started again, thus doing away with the extra trips back and forth from the fire to the engine to perform this duty. If the valve comes up to expectations every engine will be equipped with one.



MANEY FOUR-WHEEL SCRAPER—SELF LOADING AND DUMPING

BOOK REVIEWS

SEWERAGE. Sixth Edition. By A. Prescott Folwell. 8vo, 506 pages, cloth. John Wiley & Sons, New York City. Price \$3.

The new edition of this useful book may be divided into two general parts. The first covers the design, construction and maintenance of a modern sewerage system and the second the question of final sewage disposal.

The first part has not been materially changed in this edition, excepting that, in order to bring it up to date, a lot of construction details have been added, particularly referring to concrete work.

At the present time it would be well to consider with special attention the good advice given in the articles on Flushing and Ventilation. The present tendency to keep sewage fresh, both to avoid all objectionable odors arising from the sewers and to accomplish in many cases a less offensive purification, has called more attention than before to the necessity for keeping sewers clean. The most economical method of cleaning is by systematic flushing, and the ways and means of accomplishing this most effectively are well described. It may be doubted, however, whether a flushing velocity of $1\frac{1}{2}$ feet per second is sufficient when a well compacted sediment has to be removed. In England double this velocity is considered by some engineers the minimum in a combined sewer, although some fix it at $2\frac{1}{2}$ feet per second when the sewer runs half full.

The article on Ventilation is also worthy of special attention on account of the sound advice it contains, but which has been rarely followed. The old idea of trapped house drains is not endorsed, but rather the more effective system of ventilating the street sewers through the house pipes to above the roofs. This system is now very satisfactorily used in a number of American cities and almost entirely on the Continent of Europe; but rarely in England, where the disconnecting house traps are very generally preferred. A number of other good suggestions are made to keep the sewer air fresh and inoffensive.

The article devoted to Maintenance is along similar lines. A neglect of sufficient attention and care is more often responsible for the bad odors arising from sewers than any faulty design. Appliances for flushing and cleaning are described and illustrated, and it would be well if they were more frequently used. Frequent and proper flushing is the most economical way of keeping sewers in a proper condition. If this is done, hand-cleaning will be seldom required.

The subject of Sewage Disposal has been practically re-written, as the increase in knowledge and better practice have been so rapid of late no other course was left.

The part on Sewage Disposal by dilution, the most usual method employed, is refreshing to read. There is a complete absence of speculation and theorizing. Plain common sense prevails, fortified by ample evidence and quotations from the Reports of the Massachusetts State Board of Health and English Government Reports.

Both fresh and salt water are stated to be capable of receiving and digesting sewage as thoroughly as any land treatment can do it. It is pointed out that the only limits are the amounts of dissolved oxygen contained in the water. Attention is called to the fact that in oscillating tidal water not only the continually entering fresh water is available for dilution, but also the re-entering flood water, to the extent of the oxygen which has been absorbed since the time when it had previously received sewage.

In cases when sewage is discharged at the surface, or ejected vertically so as to quickly reach the surface, it is shown, for instance in Boston, that although the sewage spreads out over the surface for quite a distance, it disappears completely within two or three hours. It might have been added that, for instance in Hamburg, when the sewage is discharged horizontally in a river 30 feet below the surface and dispersed at several points, it is at once removed from sight and practically disappears.

The methods of treating sewage on land are classified as those effecting a physical removal of suspended matter and chemical changes in the organic matter. They are also classified as those effecting a physical removal of bacteria and their destruction by chemical and biological processes.

The impression might be conveyed that the bacteria should be removed and destroyed. This would not be quite correct. Sewage purification is accomplished both by physical and biological processes. The latter are to a large extent due to bacterial activity as a later article of the book well shows. Therefore, the utilization of such activity requires suitable conditions for bacterial life and its propagation, namely, a proper temperature and sufficient air. We must not endeavor to remove or destroy the bacteria which do the purifying. They die of themselves when the process is finished. We must, however, destroy the pathogenic bacteria which are liable to produce disease. They usually perish with the others, but sometimes the conditions demand a special destruction, as discussed in the article on disinfection. When this is done most of the useful bacteria also are destroyed. But fortunately these are gradually restored from one harmless source or another, while the pathogenic bacteria will not reappear, except from cases of disease with which they are specially associated. One of the main difficulties in the case of sewage purification will, therefore, be the dual requirement of the destruction of pathogenic and the propagation of useful bacteria which are needed to purify the sewage.

We find in this book probably the first fair description of sludge treatment by the Emscher or Imhoff tank. It might have been more ample in view of its probable future, but the book was written before the tank came into sudden prominence. One of the chief features of the same is the possibility, after the organic matter has rotted away, of a frequent sludge withdrawal in small quantities. This withdrawal produces a motion of the whole mass, exposing fresh sludge surfaces to bacterial activity, which produces the rotting away of the offensive matter, with the result that the sludge becomes inoffensive, can be dried within a few days and utilized for filling and even for top-soiling.

The Travis tank, which is the prototype of the Imhoff tank, is also briefly described. The comparison is not made plain that the Imhoff tank has a practical separation of the upper compartment, through which the fresh sewage passes from the lower compartment which collects the sludge; while the Travis tank admits four-fifths of the sewage to pass through the upper and one-fifth through the lower compartment, and then allows both to mix when discharged. An important difference between the two tanks is, that the Imhoff tank discharges fresher sewage. But a still more important difference is that the Imhoff sludge, in which the organic matter is well rotted away, has no offensive odor when withdrawn, while the Travis sludge, not having had the necessary time for the organic material to digest, retains the usual foul sludge odor. This is clearly ob-

served at the latest installation at Norwich, England.

The article on Oxidation gives a clear presentation of the facts concerning the final purification of sewage, and will be of much use to engineers in understanding the biological and chemical processes effecting the same. It will therefore be of much assistance when designing disposal works.

The author then covers the various works adapted to sewage purification with good descriptions, including intermittent filtration, contact filters, slate beds and sprinkling filters. Disinfection is then given an article and the disposal of sludge, naturally limited to foul sludge from common settling basins and septic tanks, is given another.

The entire work is clearly written, and in its present enlarged edition brought up to date, will be very helpful to all students of the subject as well as to practical engineers.

RUDOLPH HERING.

LAW AND BUSINESS OF ENGINEERING AND CONTRACTING. By Chas. Evan Fowler. Octavo, 152 pages. Illustrated, cloth. McGraw Publishing Company, New York. Price, \$2.50, net.

This book, written in a somewhat conversational style, with the points illustrated by anecdotes giving experiences of the author, is the elaboration of a series of lectures delivered by him to engineering students of the University of Washington. The general style retains something of the nature of the lectures, in that the statements are not clear-cut and there is an apparent avoidance of conciseness which is usually considered desirable in a treatise on engineering topics.

The first chapter on "Relation Between the Engineer and Contractor" is an effort to show wherein the interests of the two are or should be common and bring about a greater appreciation by each of the qualities of the other. Following this, the author describes the general ideas which form the basis of contracts and specifications, and the reasons for many of the legal forms and phraseologies employed. Forms for ordinary and special contracts and specifications, a considerable number of them being those used by the War and Navy Departments of the United States Government, are given to illustrate the points and as forms to be followed more or less closely in drawing up contracts and specifications.

Chapter VII deals with estimating of materials and cost of engineering structures; the author giving figures only by way of illustration and not attempting to indicate what exact prices may be used, but rather how to obtain and use prices. In Chapter VIII a number of suggestions are given as to just how to go about bidding on a contract. One suggestion is, to always cut a small fraction of a cent off your estimate so as just to underbid the other fellow. The feelings of the engineer's assistant who is called upon to figure out the total of a bid full of such items as "43.85 cents a yard for excavation" does not have to be imagined; the writer of this review has been there himself. A chapter is given on "The Organization of Contract Work," including the engineering, construction, purchasing and auditing departments; the general superintendence, transportation and field and shop organization. The final chapter, entitled "The Essentials of Contract Law," is a condensation of another work entitled "Clark on Contracts." Throughout the work are found forms not only for contracts and specifications, but for keeping expense accounts, labor accounts, etc.; the forms occupying 86 pages and the original text 66 pages.

PATENT CLAIMS

976,012. ROAD-ROLLER. Marquis J. Todd, Buffalo, N. Y., assignor to Buffalo Steam Roller Company, Buffalo, N. Y., a Corporation of New York. Serial No. 548,283.

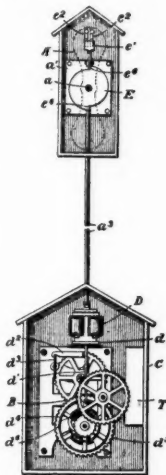
A road-roller having front and rear carrying wheels, a roll designed to fit between the front carrying wheels and to form with the latter a front roll, and means carried by said roll for detachably securing it in place.

976,520. PROCESS OF MAKING WATER-PROOF PORTLAND CEMENT AND PRODUCT. Maximilian Toch, New York, N. Y., assignor to one-half to Henry M. Toch, New York, N. Y. Serial No. 552,876.

The process of making waterproof Portland cement, which consists in mixing with the cement a fat and a metallic compound the base of which will combine with glycerin, saponifying the fat by a calcium compound in the mixture, and binding the liberated glycerin as a metallic glycerid.

976,578. POLICE SIGNAL DEVICE. Earl J. Kingsley, John Greene and William Guy Sadleir, Salt Lake City, Utah. Serial No. 406,370.

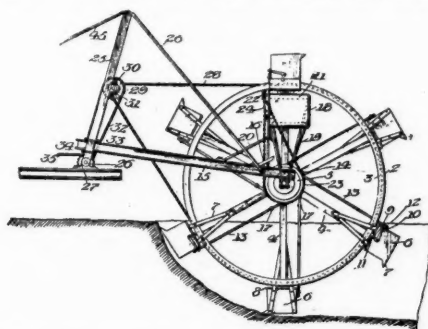
In a signal device, a signal arm, driving mechanism therefor, an electric circuit including a source of current and a light, a cam actuated from the shaft of said signal



arm and arranged to open said circuit suddenly and to close said circuit, and means for controlling said driving mechanism.

976,589. EXCAVATING MACHINE. David W. Miller, Chicago, Ill. Original application filed January 8, 1907. Serial No. 351,347. Divided and this application filed. Serial No. 415,312.

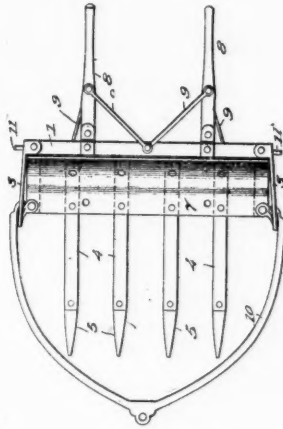
In a wheel excavator, the combination of a wheel frame, a series of buckets secured to said frame, the radial inner face of each bucket being hinged thereto at one side edge thereof and arranged to open laterally



when the bucket of which it forms a part arrives at or adjacent to the top of the wheel, a latch for holding the hinged member of each bucket in closed position until the bucket arrives at discharging position, and automatic means for successively retracting the latches, said hinged bucket members closing by gravity during the descent of the buckets and being automatically latched.

976,631. COMBINED DIGGER AND SCRAPER. Benjamin A. Carlson and William D. Hart, Sioux Falls, S. D. Serial No. 552,649.

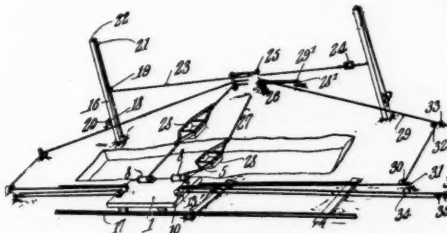
In an implement of the character described, a head bar, curved end members connected therewith, correspondingly curved teeth secured upon the head bar, a shield secured upon the end members and



upon the curved portions of the teeth, sharp-pointed prongs at the front ends of the teeth, and an apron supported upon the teeth and having a pocket detachably engaging the prongs, said apron abutting upon the front edge of the shield.

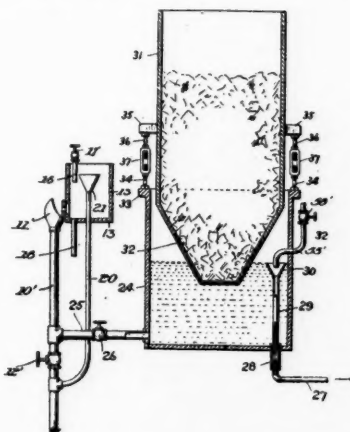
976,663. EXCAVATING APPARATUS. Lars A. Larson, Weir, Kans. Serial No. 549,961.

An excavating apparatus comprising a track, a car arranged to travel upon the track, masts located adjacent the track, a track supported by said masts, a carriage



arranged to travel upon the tracks supported by the mast, means operatively connecting the car with the carriage to cause the same to move simultaneously, scoop cables connected with the car and guided by the carriage, and scoops attached to the said scoop cables.

976,665. APPARATUS FOR IMPREGNATING LIQUIDS WITH COAGULANTS. John W. Ledoux, Swarthmore, Pa. Serial No. 464,939.

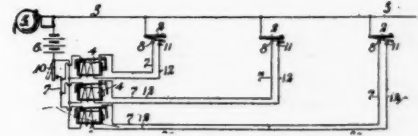


In apparatus of the class described, the combination of means for holding a predetermined quantity of a liquid, means for charging said liquid at a predetermined rate, with means for maintaining in said liquid a predetermined quantity of a solid,

whereby said liquid absorbs a substantially constant amount of said solid.

976,645. ELECTRICAL FIRE-ALARM SYSTEM. James Haslip Field, Victoria, British Columbia, Canada, assignor to The Canadian Taylor Automatic Fire Alarm and Call Bell Company, Limited, Victoria, Canada, a Corporation. Serial No. 475,844.

In an electrical alarm system of the character described, an alarm bell and battery connected in series therewith, a plurality of general thermostats in circuit with said



battery and bell for operating the same, and a master thermostat coöperating with the aforesaid parts to render said general thermostats inoperative under predetermined conditions.

977,109. SNOW-MELTING MACHINE. William N. Lux, South Milwaukee, Wis., assignor of one-half to Andrew Kubert, Milwaukee, Wis. Serial No. 537,517.

A snow-melting machine comprising an elevator, a plurality of melting-tables in different planes one above another, a conveyor adapted to receive the snow from said elevator and convey it over the tables, and means for heating said tubes.

977,306. SUBWAY CONSTRUCTION. Edward B. Hess, New York, N. Y. Serial No. 583,728.

A railroad subway system comprising a track-way for carrying cars, an emergency exit, an emergency tunnel leading from the track-way to the emergency exit, a means for, under normal conditions, obstructing traffic through the tunnel between the emergency exit and the track-way and means for setting into operation appropriately located signaling devices in the track-way when the emergency tunnel is in emergency use.

NEW INCORPORATIONS

The F. M. Brown Concrete & Waterproofing Co., Manhattan, N. Y.; construction work, waterproofing, etc.; capital, \$10,000. Incorporators: Fred M. Brown, Bridgeport, Conn.; Warren L. Smith, 251 West 145th street; Josiah Canter, 227 West 140th street, New York City.

Noll Pump Company, Manhattan, N. Y.; manufacture machinery, pumps, etc.; capital, \$100,000. Incorporators: Eugene Del-Mar, 115 Broadway, Geo. V. Maynard, 27 William street, John J. McGuire, 115 Broadway, all of New York City.

Latey & Slater, Inc., Manhattan, N. Y.; consulting and construction engineers, etc.; capital, \$50,000. Incorporators: Harry N. Latey, Frederick L. Booth, both of 587 Riverside drive, New York City; Frederick R. Slater, 618 North Bdy., Yonkers, N. Y.

Fort Dearborn Co., Chicago, Ill.; general contracting. Incorporators: Thos. W. Kelly, Wm. D. Watson, Singe Anderson, Will J. Beil, 1008-1010 Washington st., Chicago, Ill.

Industrial Engineering Company, Pittsburgh, Pa.; capital, \$10,000.

American Power Company, Reading, Pa.; capital, \$50,000.

Kipp Construction Co., Camden, N. J.; contracting and construction; capital, \$125,000. Incorporators: V. A. Murray, J. R. Bradley, Doerling Belinger, all of Camden, N. J.

The Moxahala Brick Co., Wilmington, Del.; capital, \$200,000. Incorporators: F. H. Mulcher, Floyd Hickie, both of Columbus, Ohio; Harry W. Davis, Wilmington, Del.

Civil Service Examination

Electrical Inspector.—The New Jersey Civil Service Commission, Trenton, N. J., will hold an examination December 22 to fill the position of Inspector of Electrical Service and Meters. The salary is from \$100 to \$150 per month, according to the ability and experience of the person selected. The position offers a good opportunity for advancement to a higher and more responsible position.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio.....	Cincinnati.....	Dec. 9.....	Improv. Hill road near residence of Jacob Stephan, Colerain tp..	Fred Dreihls, Clk. County Comrs.
New York.....	Inlet.....	Dec. 9, 9 a.m.....	Bldg. public highway in town.....	F. E. Tiffany, Chm. Town Board.
Indiana.....	Lafayette.....	Dec. 9, 10 a.m.....	Constructing Phillips gravel road in Wabash Township.....	John P. Foresman, County Auditor.
New Jersey.....	Jersey City.....	Dec. 12, 2 p.m.....	Improving St. Paul ave., Germania to Summit aves.....	Geo. T. Bouton, Clk. St. & W. Cms.
Pennsylvania.....	Wilkes-Barre.....	Dec. 12, noon.....	Grading, paving and curbing Division st.; three materials.....	B. K. Finch, City Engineer.
Indiana.....	Crown Point.....	Dec. 13, noon.....	Bl'g. gravel roads in Calumet and North Townships.....	Charles A. Johnson, County Aud.
Minnesota.....	Crookston.....	Dec. 13.....	Asphalt pav., Houston ave., and 5 sts., J. E. Carrol, City Engr	A. M. Childs, City Clerk.
New York.....	New York.....	Dec. 13, 11 a.m.....	Flagg, sidewalks, grad., setting curbs, regulating sts., etc., Bronx	C. C. Miller, Pres. Bronx Boro.
New York.....	Newburgh.....	Dec. 15, 5 p.m.....	Asphalt. asphalt block or bitulithic paving, 6,130 sq. yds., on concrete, curb, catch basins, m.h., etc., Grand st. \$500 check	D. J. Coutant, City Engineer.
Alabama.....	Birmingham.....	Dec. 16.....	Paving 6,300 sq. yds. with bitulithic.....	Maury Nicholson, City Engineer.
Oklahoma.....	Pauls Valley.....	Dec. 19, 5 p.m.....	Vit. block paving, 10,300 sq. yds., with 6-in. concrete base and 3,600 lin. ft. concrete curb and gutter; A. C. McCord, C. Engr.	City Clerk.
Indiana.....	Williamsport.....	Dec. 19, 1 p.m.....	Constructing gravel road in Pine Township.....	R. L. Winks, County Auditor.
Ohio.....	Cleveland.....	Dec. 20, noon.....	Bl'g. sidewalk on Coventry road, Cleveland Heights.....	H. H. Canfield, Beckman Bldg.
Oklahoma.....	Tulsa.....	Dec. 20.....	Construct. seven miles of pave., bids received Nov. 22 rejected.	E. B. Cline, City Auditor.
Indiana.....	Fort Wayne.....	Dec. 21.....	Grad., graveling or macad. road in Maumee Township.....	Board of County Commissioners.
Indiana.....	Logansport.....	Dec. 22.....	Constructing James F. Harvey Road, bids of Nov. 15 rejected.	George W. Cann, County Auditor.
North Carolina.....	Wilmington.....	Dec. 22, noon.....	Macadam pav. 4,263 sq. yds., certain sts.; C. R. Humphreys, C.E.	Walter C. MacRae, Mayor.
Kansas.....	Ft. Leavenworth.....	Dec. 22, 11 a.m.....	Bl'g. roads, walks, etc., sewer and water connections, 3 bldgs.	Capt. J. E. Normoyle, O.M., U.S.A.
North Carolina.....	Wilmington.....	Dec. 22, noon.....	Macadam pavement, 4263 sq. yds.....	C. R. Humphreys, City Engineer.
Indiana.....	Indianapolis.....	Dec. 27, 10 a.m.....	Furn. 350 carls or 14,000 yds. crushed stone for Co. roadways.	Albert Sahn, County Auditor.
Florida.....	St. Petersburg.....	Jan. 5, 7.30 p.m.....	Brick pav. 4000 lin.ft. laid flat, gran. curb, grad. etc., 2d st..	W. F. Divine, City Clerk.
SEWERAGE				
Georgia.....	Atlanta.....	Dec. 12, 3 p.m.....	Bldg. Peachtree Creek disp. plant, 5 mi. from city, cost \$200,000	Hering & Fuller, 170 Bwy., N. Y. C.
Nebraska.....	Hebron.....	Dec. 12.....	Bldg. lat. sewers Dist. No. 1: 120 ft., 8-in. c. i. pipe, 11,800 ft., 12-in. galvanized iron service pipe, 4 flush tanks, 22 manholes, total cost, \$11,100; C. H. Meeker, McCook, Engineer.....	C. M. Smith, Mayor.
Indiana.....	South Bend.....	Dec. 13, 10 a.m.....	Bl'g. pipe sewers in portions of Howard av. and Olive st.....	Otto C. Bastian, Chm. Bd. Pub. Wks.
New York.....	New York.....	Dec. 13, 11 a.m.....	Bl'g. sewer in Westchester av. and Square, also 2 other sewers.	C. C. Miller, Pres. Bronx Borough.
New York.....	Brooklyn.....	Dec. 14, 11 a.m.....	Bl'g. sewer in 16th av., also in 13th av.....	A. E. Steers, Boro. President.
California.....	Orange.....	Dec. 15.....	Furn. material and bldg. outfall sewer system.....	C. W. Hallman, City Clerk.
West Virginia.....	Huntington.....	Dec. 19, 1 p.m.....	Bldg. 2,300 ft. and 1,700 ft. 3 x 4 single ring brick trunk sewers.	A. B. Maupin, City Engineer.
New Jersey.....	Plainfield.....	Dec. 19, 8 p.m.....	Furn. and install. 2 pumping plants complete, inc. motors, compressors and ejectors in duplicate, air receivers and pipe conn., complete, capacity 175 galls. per min. for sewage pumping.....	James T. MacMurray, City Clerk.
Indiana.....	Shelbyville.....	Dec. 20, 6 p.m.....	Bl'g. sanitary trunk sewer system, partly built by Thomas Sweeney Co.....	L. E. Webb, City Clerk.
Georgia.....	Dalton.....	Dec. 20, 2 p.m.....	Bl'g. sanitary sewer system; 6 to 9 miles, 8 to 15-in. pipe sewers and disposal plants, complete; H. S. Jaudon Eng. Co., Box 582, Savannah or Atlanta.....	Paul R. Trammel, Mayor.
California.....	Oakland.....	Dec. 21, 11 a.m.....	Bl'g. main Lake sewer, \$15,000 bond; exten., 36th st. main out.	James W. Nelson, Secy. Bd. Pub. Wks.
Alabama.....	Birmingham.....	Dec. 21, 11 a.m.....	Bl'g. \$300,000 worth of storm sewer mains and branches.....	Maury Nicholson, City Engineer.
Washington.....	Olympia.....	Dec. 23, 5 p.m.....	Bl'g. sewer in north and south alley, block 14, Sylvester's plot	J. R. Dever, City Clerk.
Arkansas.....	Fordyce.....	Jan. 1.....	Building 6-mi. san. sewer, mainly 8-in., 2 septic tanks, Dist. 1.	W. J. Parkes, C.E., Pine Bluff.
Wisconsin.....	Portage.....	Jan. 3.....	Completion of sewer work which has been interrupted.....	F. G. Clark, City Engineer.
Wyoming.....	Buffalo.....	Jan. 6, 8 p.m.....	Bl'g. sewer system: 6,390 ft., 6-in.; 11,540 ft., 8-in.; 1910 ft., 10-in.; 4,340 ft., 12-in. and 700 ft., 15-in. pipe sewer, 51 manholes, 15 flush tanks; 22 lamp holes, house conn., outlets, etc.	E. L. Clarke, Engineer-in-Charge.
Manitoba, Can.....	Souris.....	Feb. 1.....	Furn. 31,000 ft. vit. sewer pipe, etc., spring and summer, 1911.	C. R. Heath, Health Engineer.
WATER SUPPLY				
Massachusetts.....	Pittsfield.....	Dec. 12, 2 p.m.....	Bldg. dam and reservoir, 7 mi. s. e. in town of Washington: 47,000 cu. yds. msry., 85,000 cu. yds. earth and 9,600 rock excav.; 45 acres clearing and grubbing, 4,000 ft. 12, 20, 24-in. vit. pipe, 1,300 cu. yds. paving.....	A. B. Farnham, Engr. B. P. Wks.
Ohio.....	Cleveland.....	Dec. 12, noon.....	Furn. and erect. 2 vert. triple-expan. eng., cap. 25,000,000 gals.	A. B. Lea, Director of Pub. Service.
Oklahoma.....	Britton.....	Dec. 12, 2 p.m.....	Furn. \$35,000 w.w. material, 8, 6 & 4-in. pipe, el. tank, pumps, etc.	D. L. Sellers, City Clerk.
Oregon.....	Portland.....	Dec. 13.....	Furn. 200 fire hydrants, f.o.b. cars, Portland.....	Frank T. L. Dodge, Sup. W. Bd.
Washington.....	Seattle.....	Dec. 13, 10 a.m.....	Pur. of one Holly, 2 Worthington & 3 Dow pumps, 10 boilers, etc.	C. B. Bagley, Sec'y Bd. Pub. Wks.
New York.....	New York.....	Dec. 13, 11 a.m.....	Furn. & install sixty-three 6 to 72-in. gate valves, twenty-four 6 to 12-in. sluice gates, ten 6-in. check valves, two 6-in. stop valves, seven hydraulic cylinders for gate valves, two motor-driven operating mechanisms, nine hand-operating mechanisms, etc., at 3 reservoirs and along Catskill aqueduct.....	J. A. Bense, Pres. Bd. Water Sup.
North Carolina.....	Payetteville.....	Dec. 15, noon.....	Bldg. water works: furn. & install two filter units of 500,000 gals. each per day, piping, machinery, etc.; bldg. plain and rein. concrete sedimentation basins, filtered water well, etc., and bldg. brick filter and power bldg., complete; J. K. Strange, Engineer-in-Charge.....	Public Works Commission.
Georgia.....	Atlanta.....	Dec. 15.....	Grad. new reservoir and riprapping embankments & slopes.....	W. Z. Smith, Gen. Mgr. Water Wks.
South Carolina.....	Yorkville.....	Dec. 15, noon.....	Install. mech. grav. filtration plant, cap. 250 to 500 gals. per min., with head gauges, controllers, pump and motor, belts, pulleys, shafting and hangers, all comp. ready for operation	John G. Branwell, Supt. Water Wks.
Nebraska.....	Lincoln.....	Dec. 15, noon.....	Furn. 170 tons, 16-in., 35 tons, 12-in., 150 tons, 6-in., 75 tons, 4-in. c. i. pipe, 5 tons specials, Class C Stand. specifications.....	James Tyler, Water Commissioner.
Nebraska.....	Fort Crook.....	Dec. 16.....	Constructing a reservoir and well at post.....	Capt. C. E. Babcock, Constr. Q.M.
Ohio.....	Carthage.....	Dec. 17, noon.....	Furn. and erect. 60, also 80 brake h.p. gas driving engines, vert. triplex single-acting plunger pump, 350 gals. pres. 90 lbs. per sq. in.; hori. straight line single-stage, belt-driven air compressor, 520 cu. ft. free air cap. per min., against 60-lb. pressure; J. W. Hill & Sons, Engrs., First Natl. Bank Bldg., Cincinnati.....	
Ohio.....	Euclid.....	Dec. 19, noon.....	Bldg. 6-in. main in Woodcliff ave., F. A. Pease Eng. Co., Engrs.....	Board of Public Affairs.
California.....	San Jose.....	Dec. 19, 11 a.m.....	Furn. 2500 ft. 21-in. pipe deliv. at Alameda R.R. station.....	Nelson J. Brewer, Village Clerk.
Washington.....	Port Townsend.....	Dec. 20.....	Furn. and lay, 3830 ft., 4-in. wood stave pipe and 1990 ft., 14-in. iron pipe with all necessary fittings.....	Henry A. Pfister, Clk., Bd. Super
New Mexico.....	Cimarron.....	Dec. 20, 2 p.m.....	Furn. mat. and bldg. gravity system: 26,600 ft., 8-in., 34,000 ft., 6-in. machine banded wood pipe, 500,000 gal. reserv., etc.	R. P. Jackson, City Engineer.
				Geo. H. Webster, Jr., Pres. Water Co.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
WATER SUPPLY (Continued)				
New York.....	Oriskany Falls....	Dec. 22, 2 p.m....	Bldg. gravity system of water works: 13,000,000-gal. reservoir, concrete dam, 25,000 ft. 12, 10, 8 and 6-in. pipe, 37 hydrants, 36 valves, etc., bids for whole work only; A. M. Scripture Eng.	Dr. G. J. Pollard, Clk., Bd. of Trus.
New Mexico....	Ft. Bayard.....	Dec. 24, 11 a.m.....	Furn. and install. complete 2 compound duplex steam pumps.	Capt. J. R. McAndrews, Con. Q. M.
Ohio.....	Cleveland.....	Dec. 29, noon.....	Constr. 8-in. water main in Euclid Hgts. blvd., Clvld. Hgts.	H. H. Canfield, Beckman Building
Michigan.....	Grand Rapids....	Jan. 19, 8 p.m.....	Constructing buildings, filters and equipment for city; plans etc. with Hering & Fuller, 170 Broadway, N. Y. City, or B. P. W.	S. A. Freshney, Gen. Mgr., B. P. W.
Manitoba, Can.	Souris.....	Feb. 1.....	Furn. 425 tons c. i. water pipe, specials, fire hydrants, gate valves and boxes, pig lead, etc., in spring and summer of 1911....	J. W. Breakey, Secy.-Treasurer.
BRIDGES				
Texas.....	Dallas.....	Dec. 10, 10 a.m.....	Bldg. Oakcliff approach to viaduct: 50,000 cu. yds. earth embankment and 300 yds. rein. concrete.....	George L. Fearn, County Auditor.
West Virginia..	Wheeling.....	Dec. 15, 2 p.m.....	Bldg. conc. arch bridge over Woods Run, Bethany Pike, Ohio co.	Fred. H. Frank, Clk. Co. Comrs.
Oregon.....	Portland.....	Dec. 15, 2 p.m.....	Erecting Lost River bridge 10 miles southeast of Klamath Falls	U. S. Reclamation Service.
Ohio.....	Cleveland.....	Dec. 17, 11 a.m.....	Planning Brooklyn-Brighton viaduct in Brooklyn Township..	Frank R. Lander, County Surveyor.
Iowa.....	Carroll.....	Dec. 21.....	Erect. sub. and superstructures of all bridges ordered dur. 1911.	Peter Stephany, County Auditor.
Texas.....	Dallas.....	Dec. 21, 10 a.m.....	Bldg. 3 swing bridges, each span 212 ft. long, plans, etc., \$2 each.	John L. Young, County Judge.
Ohio.....	Youngstown.....	Dec. 22, 11 a.m.....	Bldg. steel br. 405 ft. long over Powers Run, Youngst'wn twp.	Will B. Jones, County Auditor.
Ohio.....	Ashland.....	Jan. 2, noon.....	Bldg. Race street arch.....	Wm. Shidler, Chm. Co. Comrs.
Indiana.....	Edwardsport....	Jan. 5, noon.....	Bldg. \$18,000 steel bridge with rein. conc. piers and abuts.	John Spiker, Vincennes, Civil Engr.
LIGHTING AND POWER				
Virginia.....	Fort Monroe....	Dec. 10.....	Furn. 520 elec. fixtures, 300 ft. cable, 3,000 ft. rub.-cov. wire..	Capt. C. C. Rorsebeck, Constr. Q. M.
California.....	Newport.....	Dec. 12, 7 p.m.....	Franchise to erect poles, etc., in sts. and alleys, and string wire and cables for elec. energy for light, heat and power.....	L. S. Wilkinson, City Clerk.
New York.....	New York.....	Dec. 12, noon.....	Chang. pres. arc lighting on recreation piers to Tungsten system	Calvin Tomkins, Comr. of Docks.
Manitoba, Can.	Winnipeg.....	Dec. 15, 11 a.m.....	Furn. 500 k.w. motor generator sets.....	H. N. Ruttan, City Engineer.
Manitoba, Can.	Winnipeg.....	Dec. 15.....	Furn. 500 kw. motor gener. sets, Smith, Kerry & Chace, Engrs..	M. Peterson, Sec'y. Bd. Control.
Nebraska.....	Omaha.....	Dec. 17, noon.....	Furn. & install 3 dir-con. engines and dynamos, inc. foundations, immediate steam supply and exhaust con., wir. & 3 gen. pane	D. M. Haverly, Clk. County Comrs.
Ohio.....	Jackson.....	Dec. 19.....	Improv. elec. light plant, cost \$11,000; C. C. Slater C. E., Col'.	R. C. Desrochers, Secy. D. Pub. Wks.
Ontario, Can..	Ottawa.....	Dec. 19.....	Furn. elec. light, fixtures, wiring, etc., pub. bldg. Vernon, B. C.	Bd. Trus., Boys' Industrial School.
Ohio.....	Lancaster.....	Dec. 20.....	Furn. material and install. add. comp., pip., etc., Indus. Sch.	Louis K. Rourke, Supt. of Streets.
Massachusetts..	Boston.....	Dec. 24.....	Lighting sts., parks and alleys designated for 10 yrs., from Jan 31	
FIRE EQUIPMENT				
Montana.....	Helena.....	Dec. 17.....	Fur. 80 hp. com. auto fire wag., cap. 2,000 ft. hose, 35 gal. tank..	J. A. Mattson, City Clerk.
California.....	Los Angeles....	Dec. 20.....	Purchasing motor-driven fire appar.; postponed from Dec. 6..	J. G. Todd, Chief, Fire Department
MISCELLANEOUS				
Washington....	Spokane.....	Dec. 9, 3 p.m.....	Furn. 50-hp. auto-propelled combin. police patrol & ambulance.	John Gifford City Purch. Agt.
New York.....	Mt. Vernon.....	Dec. 9, 8 p.m.....	Painting all fire alarm boxes and poles, also 5 fire stations..	John A. Hunt, Clerk Fire Comrs.
Texas.....	Weatherford....	Dec. 9, noon.....	Bldg. brick city hall and fire house.....	W. W. Waldo, Chm. Bldg. Com.
Oklahoma.....	Tulsa.....	Dec. 12.....	Bldg. \$200,000 Court House, Winkler & McDonald, Tulsa, Arch.	C. F. Rogers, County Clerk.
California.....	Oakland.....	Dec. 14, 11 a.m.....	Furn. and plac. rock portion of embank. in "Key Route Basin"	James W. Nelson, Sec'y. Bd. P. Wks.
Manitoba, Can.	Winnipeg.....	Dec. 15, 11 a.m.....	Furn. an electric traveling crane; H. N. Ruttan, City Engineer.	M. Peterson, Sec'y., Bd. Control.
Georgia.....	Atlanta.....	Dec. 16, noon.....	Handling and disposing of garbage, ashes and refuse of city..	John J. Jentzen, Chf. Sanitary Dept.
California.....	Oakland.....	Dec. 21, 11 a.m.....	Dredging channel and bldg. levees with dredg. spoil in Key R.B.	James W. Nelson Secy. Bd. Pub Wks.
Indiana.....	Huntington....	Dec. 31.....	Collecting garbage for one year, ashes to be separated.....	Ed. Smith, Street Commissioner.
Ohio.....	Toledo.....	Dec. 31, noon.....	Sale of street scrapings and mat. from catch bas., 5 or 10 yrs..	Fred Shane, Sec'y., Dir. Pub Service.
Wisconsin.....	Whitehall.....	Jan. 10, 2 p.m.....	Bldg. brick and stone addi. to Court house & jail, cell work, etc.	Jas. N. Hunter, Chm., C. H. Com.
Louisiana.....	Lake Charles..	Jan. 16.....	Erect. \$165,000 Court House, Payrot & Livadais, Archts., New Orleans.....	Police Jury.
Pennsylvania..	Pottsville.....	Jan. 17, noon.....	Gen. contract for erect. bldg. for insane at Schuylkill Haven..	Charles T. Straughn, County Cont.

STREET IMPROVEMENTS

Wetumpka, Ala.—Citizens have voted \$170,000 bonds for good roads in Elmore County.—E. W. James, Collins, Miss., U. S. Highway Engineer.

Alhambra, Cal.—The Board of Trustees has ordered grading and oiling of 6th st. and Palm ave., together with construction of cement curbs, gutters and culverts.—A. A. Clapp, City Clerk.

Northside, Cal.—Residents of New York ave. have decided to beautify and improve that thoroughfare.

Oakland, Cal.—Council has decided to open Farnum st. and establish grades on 32d st.; specifications will be prepared for extension of 11th and 12th sts. to water front.

Orland, Cal.—Extension of cement sidewalks is being considered.

Sacramento, Cal.—Business men are favorable to construction of road between this city and Davisville.

Trinidad, Col.—Council has decided to improve Plum st.—I. I. Milliken, City Clerk.

Brunswick, Ga.—Council is considering ordinance for paving Gloucester st., Grant to Union, with vit. brick.

Danielsville, Ga.—Madison County will improve roads under direction of Clarke County Engineer.—Judge B. T. Moseley and C. E. Griffith, Road Commissioners.

Sparta, Ga.—Hancock County has voted \$60,000 good road bonds.

Batavia, Ill.—Council is considering paving of Wilson st.

Chicago, Ill.—Board of Local Improvements is considering paving of central business district.

Freeport, Ill.—Contracts for paving Jefferson, Benton, Shawnee, South Carroll, Fleet and High sts. and Rotzler's ave. are to be awarded early in the spring.—Mayor Rawleigh.

Glencoe, Ill.—Board of Village Trustees has received no bids for paving streets in Newhall subdivision.

Park Ridge, Ill.—Plans have been prepared by Engineer H. H. Bremer, 100 Washington st., Chicago, for ¼ mile of macadam paving.

Peoria, Ill.—City is considering extension of Warner ave.; estimate will be prepared for resurfacing Bigelow st. with asphalt.

Sheldon, Ill.—City is considering macadamizing of Grove and Center sts.

Springfield, Ill.—Plans have been completed by City Engineer F. H. Hamilton for asphalt paving and vit. brick paving on concrete foundation; cost \$37,000.—J. E. Smith, City Clerk.

Kendallville, Ind.—Cost of paving Main, Rush and Mitchell sts. has been estimated at \$10,669.10.

Davenport, Ia.—City is considering resurfacing of Brady st. at cost of \$18,000.—A. M. Compton, City Engineer.

Topeka, Kan.—City Commissioners have approved petitions for 50 blocks of paving.—W. G. Tandy, Commissioner of Streets.

Topeka, Kan.—City Engineer W. S. Fulton has recommended curbing and guttering of Kansas ave. 5th st. to 10th ave.

Salem, Mass.—Council has appropriated \$5,000 for additional surveys and for plans for thoroughfare for steam trains exempt of grade crossings.

Springfield, Mass.—Widening of Vernon st. is being considered.

Kalamazoo, Mich.—Chairman W. M. Bryant has made an appeal for better city streets before Council.

Marquette, Mich.—Baraga County Commissioners will consider construction next season of highway connecting this city with Baraga, Houghton and Gogebic counties.

Crookston, Minn.—City is considering paving for next year at cost of \$50,000.

Jackson, Miss.—Hines County Commissioners have authorized \$200,000 for roads; surveys are now being made.—E. W. James, Highway Commissioner.

Camden, N. J.—Council has decided to pave Fillmore st., Ferry ave. to Bulson st., with sheet asphaltum on concrete foundation.—Jas. E. Hewitt, President.

Sea Isle City, N. J.—Finance Committee will receive bids Dec. 12 for \$12,000 street improvement bonds.

Westfield, N. J.—Council is considering \$40,000 bond ordinance for sidewalks, roads and sewers.

Binghamton, N. Y.—Provision has been made in 1911 budget for purchase of stone crusher which will be used in making good roads throughout city.—Charles S. Darling, Commissioner of Public Works; John A. Giles, City Engineer.

Brookport, N. Y.—Board of Trustees has decided to improve East and West aves.

Lockport, N. Y.—Board of Supervisors has adopted resolution calling on State Highway Commission to make better progress with good roads works in Niagara.

Lyons, N. Y.—Residents of Alton have asked Wayne County Board of Supervisors to reconsider plans for county road extending from that village to Bochen's Corners.

New York, N. Y.—Chief Engineer Lewis of Board of Estimate is at work on plans for construction of tunnel walk through Fort George Hill from Broadway and Fairview ave. to the new subway station at St. Nicholas ave. and 190th st.; tunnel will be 16 ft. broad and 16 ft. high and about 1,000 ft. long; cost about \$800,000.

Seneca Falls, N. Y.—Village is considering paving of West Fall st.

Schenectady, N. Y.—State Highway Commission is considering petition from residents of Niskayuna asking for extension of Schenectady-Vischer ferry road to length of the ordinary plan; road will be macadamized next year.

Whiteville, N. C.—City has decided to pave streets with Beech Island cement-gravel; Madison ave. from depot to court house will be paved first at cost of \$8,000 to \$10,000.

Akron, O.—Bids will be received Dec. 22 for \$378,000 bonds for improvement of Cleveland road with brick; distance 17½ miles; width 14 ft.

Girard, O.—Council has decided to pave State st.

Montpelier, O.—Council has ordered survey of streets preparatory to paving; Empire and Court sts. will be paved in spring.

Newark, O.—Bids will be received Dec. 19 for \$40,000 street improvement bonds.—Wm. F. Wulphoo, City Auditor.

Toledo, O.—Chief Engineer G. W. Tonson has estimated that it will cost \$45,520 to re-surface Cherry st., Summit to Bancroft, and open street from Champlain to Bancroft to the full width; estimate is exclusive of cost of repaving 14 ft. occupied by the car tracks.

Toledo, O.—Council Committee on Finance has approved resolution instructing Chief Engineer to secure engineer to prepare plans for proposed municipal asphalt plant.

Youngstown, O.—Market st. will be repaved from Viaduct to Warren ave.

Oklahoma City, Okla.—Oklahoma County has voted \$500,000 bonds to build county highway in eight townships.

Franklin, Pa.—Repaving of Liberty st. at cost of \$6,000 is being considered.

Pittsburg, Pa.—Council has passed ordinances for widening Shady ave. from E. A. Pitt blvd. north and paving, grading and curbing Meadow and six other streets.

Nashville, Tenn.—Board of Public Works will consider widening of 4th ave. South.

Nashville, Tenn.—Mayor H. E. Howse has recommended improvement of number of streets.

Cross Plains, Tex.—Cross Plains Township Co. has authorized grading of 10 miles of streets in new townsite.

San Antonio, Tex.—Council has decided to extend College st.

Wichita Falls, Tex.—Election on \$60,000 bonds for street paving purposes is being urged.

Bristol, Va.—Lee County has voted \$300,000 bonds for good roads.

Norfolk, Va.—Courtney st. will be widened at cost of \$27,000.

Marinette, Wis.—City is considering concrete paving on number of streets in spring.—A. L. Hillis, City Engineer.

Calgary, Alta., Can.—Cost of paving 9th ave. has been estimated at \$9,770.50.

Hamilton, Ont., Can.—City is considering election on \$125,000 bonds for laying asphalt on several streets.

Toronto, Ont., Can.—City Engineer Rust has recommended construction of following asphalt pavements: Paton road, Emerson ave. to Lansdowne, \$3,189; Edwin ave. to Ruskin ave. to north end, \$11,269; Robinson st., Palmerston to Euclid ave., \$1,843; bitulithic pavements are recommended for Bellwoods ave., Arthur to Mansfield, \$7,161, and for Indian road, Boustead to Bloor, \$8,765.

Wakely, Sask., Can.—Citizens will vote on \$24,000 road debentures.

CONTRACTS AWARDED

Glendale, Cal.—To W. K. Peaseley, Wilcox Bldg., Los Angeles, for improvement of Glendale and Tropic roads and 6th st., \$10,000; also for improvement of La Cadda-Verdi road, about \$13,888.

New Orleans, La.—Installing subsurface drainage, culverts, curbs, etc., in connection with paving of Rendon st., Dumaine to De Soto, to Standard Paving and Construction Co., \$6,234.20; lake side of Claiborne st., Esplanade to Elysian Fields, to Barber Asphalt Co., \$15,542.70; Octavia st., Freret to Robertson, to Barber Asphalt Co., \$4,247.50; paving Octavia st., Freret to South Robertson, to Barber Asphalt Co., \$2,448.95; lake side of Claiborne st., Esplanade to Elysian Fields, to Barber Asphalt Co., only bidder, \$44,269; Rendon st., Dumaine to De Soto, to Standard Paving and Construction Co., \$13,004.50.

New Orleans, La.—To A. Black, city, to pave Prytania st. from Robert to Joseph st. with crosstotted wooden block and bitulithic, \$27,945.

Lincoln, Neb.—Paving District No. 113, including B st. from 7th to 11th, and District No. 183, including C st. from 19th to 27th, B st. from 19th to 20th and 19th st. from A to D, to M. Ford, \$49,399; other bidders: Barber Asphalt Paving Co., Omaha, \$50,626; National Construction Co., \$49,430.

Newark, N. J.—Grading, curbing and flagging Carlisle and Clay sts., to Van Kueren & Son, \$5,040.60.

Harrisburg, Pa.—To Barber Asphalt Co., 58,922 sq. yds. of paving; total cost, including curbing, \$119,800; to Central Construction Co., 19,330 sq. yds., \$40,000.

Natrona, Pa.—Paving and sewerage in Pine st., to Van Vetter Contracting Co., Mack block brick, \$8,175; other bidders: Samuel Gamble, Penn. clay brick, \$9,200; Ridge Bros., Penn. clay brick, \$9,951; Brown & Crisman, Mack block brick, \$10,895; Duster Contracting Co., Penn. clay brick, \$9,157; Swan & Speedy, White Rock brick, \$9,657; James Topley & Co., Toronto brick, \$9,061; Reinhardt Bros., any brand of brick, \$9,932.

El Paso, Tex.—To Texas Bitulithic Co., paving West Missouri st., \$13,830.98.

Dallas, Tex.—Paving Haskell ave., Rose to Pacific sts., to Texas Bitulithic Co., \$2.30 per sq. yd.

Orange, Tex.—Building Trans-Colcasien highway, Sabine River to Vinton, to Mayor E. W. Brown.

New Westminster, B. C., Can.—To Has-sam Paving Co., for paving 3d st., \$44,760.

Prince Rupert, B. C., Can.—Grading 2d ave., to S. H. Watson & Co., \$2,284.16; S. P. McMordie, \$969.74; to same contractor for section 3, \$1,200; for section 4, \$3,174.10; to John Viereck, \$229.90; to P. J. Swanson for work on Beach pl., \$1,574.32; Hays, Cove and 8th ave., to McInnes & Kelly, \$3,872.14; Reilly & Roberts, \$385.84; to A. McLean for work on Fraser, 5th, 6th, 7th and 8th sts., \$286.76; to C. W. Tankley, piling, 2d st., \$197.84.

BIDS RECEIVED

Phoenix, Ariz.—Robt. A. Craig, Secy. State Bd. of Control, writes that the following are the bids opened Oct. 18 for constructing a highway between Bisbee and Douglas: (a) R. Toohy & Sons, Phoenix, Ariz.; (b) Johnson-Shea Co., Riverside, Cal.; (c) Andy Scott, Douglas, Ariz.:

	a	b	c
Grading:			
71,570 cu. yd. earth....	\$0.18	\$0.18	\$0.17
1,000 cu. yd. loose			
rock.....	.49	.60	.47
890 cu. yd. solid			
rock.....	1.10	1.10	1.00
Rubble:			
100 cu. yd. concrete.	7.50	7.50	7.50
200 cu. yd. rough....	4.00	4.00	4.00
250 cu. yd. riprap....	5.00	4.50	4.50
Finish surface of road sec.:			
269,863 sq. yd. rolling....	.04	.05	.04
211,200 sq. yd. wetting....	.04	.04	.04
211,200 sq. yd. oiling....	.06	.07	.08
1,900 cu. yd. furn. & spread.....	2.00	1.95	1.75
Clear and grubbing per acre.....	8.00	49.00	10.00
Force acct. work, \$2.30. +10% +10% +10%			
Totals.....	\$55,396	\$60,097	\$58,195

Los Angeles, Cal.—Improvement of Hoover st. Pico to Alvarado Terrace: George R. Curtis, 19c. per sq. ft. for asphalt paving, 30.9c. per sq. ft. brick paving, 14c. per sq. ft. macadam paving, 35c. per lin. ft. for cement curb, 8c. per sq. ft. for grading and graveling and oiling, 28c. per sq. ft. for vit. brick gutters, 14c. per sq. ft. for cement gutters, \$300 for culverts, complete: Withers & Crites, 17½c., 28½c., 12c., 33c., 28c., 14c., \$263; B. F. Ford, 18c., 30c., 13c., 30c., 8c., 30c., 13c., \$400; Fairchild-Gilmore Witton Co., 17½c., 28c., 12c., 30c., 12c., 28c., 16c., \$310. Fireman st.: P. Heim, 25c. per sq. ft. for asphalt paving, \$2.75 per lin. ft. for grading and graveling, 35c. per lin. ft. for cement curb, 16c. per sq. ft. for cement gutter, 32c. per sq. ft. for vit. block gutter, \$300 for storm sewers and appurtenances: H. O. Richwine, 35c., \$2.85, 35c., 16c., 30c. and \$49 for storm drain with catch basin and outlet, complete: J. E. Shafer, 15c., \$2, 34c., 14c., 32c., \$100 for culverts, complete, and 40c. per lin. ft. for cement curb on Temple st.: H. H. Curtis, 20c., \$2.20, 35c., 14c., 30c., \$100 for storm sewers, complete: O. A. Nicols, 16c., \$2.65, 35c., 16c., \$100 for storm drain, complete, Marengo ave. State st. to Britannia st.: D. D. Chapman, \$2 for regrading, oiling and graveling, \$2.65 for grading and graveling, 35c. per lin. ft. for cement curb, 15c., per sq. ft. for cement gutter, 35c. per sq. ft. for vit. block gutter: H. O. Richwine, 7c. per sq. ft., \$2.90, 35c., 16c., 30c. Bellevue ave., Bonnie Brae to Belmont ave.: P. Heim, \$9 per lin. ft. for grading and graveling, 35c. per lin. ft. for cement curb, 16c. per sq. ft. for cement gutter, 32c. per sq. ft. for vit. block gutter, Wadsworth st.: David Joy, \$2.25 per lin. ft. for grading and graveling, 30c. per lin. ft. for cement curb, 14c. per sq. ft. for cement gutter: P. H. Heim, \$2.25, 32c.,

15c. Valencia st.: David Joy, 14c. per sq. ft. for cement gutter, 30c. per sq. ft. for vit. block gutter, 35th st., from Naomi to Central ave.: P. Heim, 10c., per sq. ft. for cement sidewalk.

Indianapolis, Ind.—Furnishing one road roller: Geiser Manufacturing Co., for 10-ton roller, \$1,950, with \$200 allowance for old roller; Huber Manufacturing Co., 12-ton roller, \$2,200, with \$250 allowance for old roller.

New Orleans, La.—By Board of Port Commissioners, for granite roadway from Thalia st. to Bienville, paralleling the levee: A. L. Patterson & Co., lin. ft., headers in place, 50c.; cu. yd., concrete pavement foundation, \$5.65; sq. yd. new granite foundation, \$2.15; sq. yd. old granite, \$1.10; Louisiana Bitulithic Co., 45c., \$5.70, \$2.12, \$1.90; Standard Paving and Contracting Co., 30c., \$6, \$1.89, 60c.; Etta Contracting and Constructing Co., 45c., \$4.75, \$2.18, 90c.; Jas. A. Craven & Co., \$40c., \$5.50, \$2.30, 80c.; Grasser Construction Co., 38c., \$4.22, \$1.03, 73c.; J. E. Ramsey, Salisbury, N. C., 50c., \$5.40, \$2.60, 80c.

New York, N. Y.—Regulating, grading, setting curbs, flagging sidewalks, laying crosswalks, building approaches and placing fences in Burke ave., from White Plains road to Bronx blvd.; lowest bidder: Perillo & Shell, as follows: 9,700 cu. yds. earth excavation, 25c.; 9,260 cu. yds. rock excavation, \$1.35; 1,740 lin. ft. new curbs, 67c.; 6,500 sq. ft. new flag, 23c.; 1,610 sq. ft. new bridge stone, for crosswalks, 50c.; 100 cu. yds. dry rubble masonry, in retaining walls, culverts and gutters, \$2; 25 lin. ft. vit. stoneware pipe, 12-in. diameter, \$1; 500 lin. ft. new guard rail in place, 15c.; total, \$18,692; totals of other bids: J. Dragonetti, \$23,294; Goodwin Construction Co., \$26,524; Anita Construction Co., \$24,230; S. Amanna, \$25,884; J. J. Shea Construction Co., \$24,981; F. Pistone, \$19,506; R. L. Sullivan, \$23,683; Lamura Contracting Co., \$21,420, and J. B. Malatesta, \$23,869; paving with asphalt block on concrete foundation East 178th st., from 3d ave. to Hughes ave., Bronx: Hastings Pavement Co., lowest bidder, as follows: 2,630 sq. yds. of completed asphalt block pavement and keep same in repair for five years, \$1.76; 450 cu. yds. concrete, including mortar bed, \$5.92; 500 lin. ft. new curbs, set in concrete, \$1; 1,500 lin. ft. old curbstone, rejointed, recut on top and reset in concrete, 33c.; total, \$8,288; the Barber Asphalt Co., \$8,522; with asphalt block on concrete foundation Longfellow ave., from Westchester ave. to Freeman st., Bronx, same company, lowest bidder, as follows: 2,525 sq. yds. completed asphalt block pavement and keep same in repair for five years from date of acceptance, \$1.68; 412 cu. yds. concrete, including mortar bed, \$5.92; 250 lin. ft. new curbs, set in concrete, \$1; 1,300 lin. ft. old curbs, reset in concrete, 33c.; total, \$7,360; Barber Asphalt Paving Co., \$7,623; regulating and paving with sheet asphalt on concrete foundation Reck st., Prospect ave. to Leggett ave., Waldo Asphalt Paving Co., lowest bidder, as follows: 3,447 sq. yds. completed sheet asphalt pavement, including binder course, and keeping in repair for five years, 90c.; 604 cu. yds. concrete, \$5; 480 lin. ft. new curb, 70c.; 1,522 lin. ft. old curb, rejointed, recut on top and reset, 30c.; total, \$6,915; Barber Asphalt Co., \$7,417, and the Asphalt Construction Co., \$7,011; Asphalt Construction Co., lowest bidder for regulating and paving with sheet asphalt on concrete foundation East 162d st. from Morris ave. to Sherman ave., \$3,015; regulating, grading, setting curbs, flag the sidewalks, laying crosswalks and paving with granite blocks on sand foundation on Canal st., West, from 135th to 138th st., Bronx, L. J. Moran, lowest bidder, as follows: 130 cu. yds. earth excavation, \$1.50; 1,605 lin. ft. new curb, \$1; 6,350 sq. ft. new flag, 26c.; 180 sq. ft. of old bridge stone, rejointed and relaid, 10c.; 2,110 sq. yds. of new granite block pavement on sand foundation, laid with sand joints, and keep in repair for one year, \$1.96; total, \$7,605; totals of other bids: J. J. Shea Construction Co., \$8,425; Civanna &

New York, N. Y.—The following are the bids opened Nov. 22 by Pres. of Bronx Boro., for repaving with redressed granite blocks on a concrete foundation Southern Boulevard, from Willis Ave. to E. 138th St., and setting curb where necessary:—(a) Atlanta Constr. Co.; (b) Lowden & Gallo; (c) L. J. Moran, (d) Asphalt Constr. Co.; (e) J. J. Shea Constr. Co.; (f) Vinton Contr. Co.:

	a	b	c	d	e	f
18,250 sq. yd. granite blocks, take up, redress and relay on concrete base, with cement grout joints, and keep same in repair 1 year.....	\$1.32	\$1.60	\$1.15	\$1.56	\$1.05	\$1.40
3,880 cu. yd. concrete.....	4.00	4.25	4.30	1.75	4.22	4.25
6,450 lin. ft. new granite curbstone, 6 x 18 in.....	1.20	1.25	1.20	1.25	1.19	1.40
6,400 sq. ft. new granite bridge stone for crosswalks.....	.70	.98	.65	.58	.60	.80
8,200 sq. yd. granite blocks to be taken up, redressed and relaid on a concrete foundation with cement grout joints.....	1.32	1.55	1.15	1.56	1.05	1.40
Totals.....	\$62,654	\$72,734	\$59,001	\$58,826	\$55,662	\$67,670

Cavalluzzo, \$7,766; Atlanta Contracting Co., \$7,861; Asphalt Construction Co., \$7,718; J. Farrell, \$8,068; M. D. Menna, \$8,176.

Syracuse, N. Y.—Paving Concord pl., Westcott to Allen st., using stone curb: John Young, macadam \$7,140.15; Hassam chemical concrete \$8,292.25; Warner-Quinlan Asphalt Co., patten pavement \$9,687; Trinidad asphalt \$9,406; J. F. J. Baker, Jamestown block \$9,630.15; Trinidad asphalt \$9,517.75; Central City Paving Co., Jamestown block \$9,475; Trinidad asphalt \$9,250.20; macadam \$8,210.50; C. T. Hookway, bitumen macadam \$6,827.30; same pavement with concrete curb: John Young, macadam \$6,507.90; Hassam chemical concrete \$7,547.25; Central City Paving Co., Jamestown block \$9,495; Trinidad asphalt \$9,292.20; macadam \$8,354.25; C. T. Hookway, bitumen macadam \$6,447.80; grading Thomas ave., Manlius st. to Kline st.: Ernest Woods \$3,894.60; A. Gaffey, \$4,536.70; A. Sposato, \$5,304.90.

Cincinnati, O.—Paving Rutland ave., Patrick Gleason, lowest bidder, \$4,544.97.

Fort Worth, Tex.—Paving Exchange ave., John C. Underwood, Dallas, \$2.65 per sq. yd. for brick; General Supply and Construction Co., \$2.11½, with 25c. extra for Coffeyville brick.

Seattle, Wash.—Improvement of lots 1, 2, 7 and 8, block 4, McNaught's addition, grading: Lewis & Wiley \$6,153.50; Agassiss & Hadley, \$6,167.50; Crawford Plate, grading and paving, gravel base: Allan & Hull, \$8,343.25; J. Ruthe, \$9,708.90; S. Normile, \$7,890.70; clinker base: Allan & Hull, \$8,343.25; J. Ruthe, \$9,708.90; S. Normile, \$7,889.70.

SEWERAGE

Portland, Ark.—City will construct sewer system.

Oakland, Cal.—Council has ordered plans for sewerage of Allendale district.

Oakland, Cal.—Council has directed the City Engineer to prepare plans for resurfacing Franklin st. and to investigate method of disposing of storm water in vicinity of Stanley road and Foothill blvd.

Colorado Springs, Col.—Council has decided to construct sanitary sewer at cost of \$10,000.

Fort Logan, Col.—State Board of Health has approved plans for \$37,500 sewage disposal plant to be installed by War Department.—Chase Doster, Quartermaster.

Wilmington, Del.—Street and Sewer Department will have additional allowance of \$5,000 for sewer extensions.

Freeport, Ill.—Council is considering sewer problem: the East Freeport sewer will require a pumping station. Address Engineer Daniels or Mayor Rawleigh.

Plainfield, Ill.—Surveys have been completed by H. D. Hallet, Construction Engineer, Aurora, for installation of sewer system.

Streator, Ill.—Board of Public Works will prepare plans for constructing sewers in number of streets.

Pikesville, Ky.—Elkhorn Land Improvement Co. will construct sewer system at Elkhorn City.

Fitchburg, Mass.—Harrison P. Eddy has been selected as Consulting Engineer for proposed main intercepting sewer; length 6 miles; work includes purification or disposal plant; cost \$700,000.—D. A. Hartwell, Resident Engineer.

New Bedford, Mass.—Board of Aldermen has ordered construction of sewers in Mill st. at cost of \$1,500; in Clara st., \$4,400, and in Frederick st., \$4,600.

Kalamazoo, Mich.—Council has decided to construct proposed Fulford st. sewer at cost of \$16,020.

Otsego, Mich.—George Burgess, Hastings, has been selected to make surveys for sewerage system.

Traverse City, Mich.—Plans are being prepared by T. H. Gillis, City Hall, for sewage disposal plant.

Duluth, Minn.—Cost of constructing trunk sewer, including septic tank, from end of Woodland car line to Fischer's Creek, has been estimated at \$70,000.

David City, Neb.—Council has decided to establish two sewer districts.—Thomas Wolfe, Mayor.

Camden, N. J.—Council has decided to construct sewers along Morton and Louis sts.—A. L. Sayers, Street Commissioner.

Milburn, N. J.—Bids will be received Dec. 12, 8.30 p. m., for \$12,000 sewer bonds.—M. R. Silance, Township Clerk.

Newark, N. J.—Council has voted to enter into contract, at cost to the city of \$6,250,000, for purification of Passaic River; contract is to be made with the Passaic Valley Sewerage Commissioners, in cooperation with other municipalities in the Passaic Valley district; project is to build trunk sewer, with branches to extend from Passaic Falls, in Paterson, to an outlet under New York Bay, near Robbins Reef; total estimated cost of sewer and branches, with sedimentation and screening plant in Newark meadows, is \$12,250,000.

Roselle, N. J.—Council has authorized extension of sewer system into Aldene sec-

tion; Borough Engineer J. L. Bauer will prepare plans.

Westfield, N. J.—Council is considering \$40,000 bond ordinance for sewers, sidewalks and roads.

Binghamton, N. Y.—Council will consider construction of trunk sewer down Park Creek.

Akron, O.—Plans for new testing station for sewage disposal plant being prepared by C. E. Bradbury, of Columbus, are now almost complete; when plans are finished Director Gauthier will proceed to appoint chemist to carry work along and make tests as to which is best system to adopt for city of Akron's size.

Charlotte, N. C.—Executive Board has ordered bids invited for improvements to east and west septic tanks; cost \$13,000 to \$15,000.—Joseph Firth, City Engineer.

Delaware, O.—Ordinances have been adopted by Council to construct sanitary sewers in Liberty and in North Sandusky sts.

Girard, O.—Bids will be readvertised for sewer construction in Main and Stambaugh sts.

Carlisle, Pa.—Citizens are to vote in two months on issue of \$100,000 bonds for constructing sewers and sewage disposal plant.—Clarence A. Bingham, City Engineer.

Valley Camp, Pa.—Chester & Fleming, Consulting Engineers, Pittsburg, have been employed by Valley Camp to prepare plans for remodeling existing sewer system and installing sewage disposal plant.

Corpus Christi, Tex.—Council has instructed F. H. Lancashire of Dallas to go ahead with the work of drafting plans and specifications for construction of sewerage system.

El Campo, Tex.—City is considering construction of sewer system.

Seattle, Wash.—Board of Public Works has approved estimates for sewers on Meridian ave. at cost of \$62,100.

Marinette, Wis.—City will construct concrete and tile sewers in number of streets next year.—A. L. Hillis, City Engineer.

Gleichen, Alta., Can.—City will spend \$30,000 on sewerage and water works; plans by Provincial Engineer R. B. Owen.

Strathcona, Alta., Can.—Ratepayers will vote Dec. 12 on \$70,000 by-law for installation of sewers.

Winnipeg, Man., Can.—City will at once ask for bids for sewer extension work to cost \$500,000.—H. N. Rutan, City Engineer.

CONTRACTS AWARDED

Ansonia, Conn.—Construction of section D of Ansonia sewer system, to O'Neil & Nero, \$15,162.

Chicago, Ill.—Board of Local Improvements has awarded contracts for sewer construction to following: M. Ponturelli, 4817 W. Dakin st.; the Ryan Co., 131 La Salle st., and to Jno. W. Brunt, 2447 E. 74th st.

Pekin, Ill.—Constructing Second and Third District sewers, to Ottawa Construction Co., Ottawa, \$91,763.18.

Lexington, Ky.—To Thomas O'Day, for constructing Oldham ave. sewer, and to Jas. Melvin for sewer on Spring st.

Newark, N. J.—Storm water sewers on Ave. C and Dawson sts., to Jersey Paving Corporation, \$5,252.60.

Fostoria, O.—Sewer in south part of town, to Modern Construction Co., Fremont, \$700.62; J. W. McMahon, Toledo, only other bidder, \$236.50 higher.

Fort Worth, Tex.—For north side sewer, to General Supply and Construction Co., city, \$51,000.

Vancouver, B. C., Can.—Vit. sewer pipe, to Colin Jackson, \$3,119; other bidders: Evans, Coleman & Co., \$3,664, and C. Gardiner, John & Co., \$3,684.

BIDS RECEIVED

Atlantic City, N. J.—Building storm water drainage system, W. G. Root, 20

Pekin, Ill.—By the Bd. of Local Improvements, Nov. 23, for the construction of sewers in Dist. No. 3 from plans of Alford & Burdick, Hartford Bldg., Chicago—(a) Engineer's Estimate; (b) Jansen & Zoeller, Pekin; (c) Johnsen & Thomsen, Racine, Wis.; (d) Reeb Bros., Belleville; (e) E. R. Harding Co., Racine, Wis.; (f) Ottawa Const. Co., Ottawa; (g) Keys & McNamara, La Salle;

	a	b	c	d	e	f	g
Pipe Sewer:							
1,491 ft. 8-in. 8.5 ft. deep.....	\$0.75	\$0.74	\$0.65	\$0.60	\$0.52	\$0.56	\$0.60
510 ft. 10-in. 7.1 ft. deep.....	.80	.79	.75	.58	.60	.55	.55
9,477 ft. 12-in. 7.5 ft. deep.....	.90	.90	.80	.69	.65	.61	.62
6,137 ft. 15-in. 8 ft. deep.....	1.10	1.10	1.05	.88	.85	.78	.78
17,742 ft. 18-in. 8 ft. deep.....	1.40	1.40	1.35	1.12	1.10	.96	.96
1,106 ft. 20-in. 8.2 ft. deep.....	1.65	1.58	1.50	1.40	1.25	1.17	1.17
1-Ring Brick Sewers:							
2,531 ft. 24-in. 10.6 ft. deep.....	2.10	2.10	2.25	1.94	2.00	1.44	1.44
2,295 ft. 30-in. 10.9 ft. deep.....	2.50	2.50	2.50	2.23	2.25	1.68	1.68
2-Ring Brick Sewers:							
510 ft. 36-in. 13.3 ft. deep.....	5.00	5.00	4.50	4.67	3.80	3.46	3.46
773 ft. 42-in. 15.5 ft. deep.....	6.48	6.45	6.00	5.50	4.50	4.19	4.19
450 ft. 48-in. 15.4 ft. deep.....	7.20	7.00	7.00	6.45	5.00	4.69	4.59
190 manholes, ea.....	35.00	35.00	35.00	32.50	30.00	30.00	30.00
278 catch basins, ea.....	40.00	40.00	38.00	34.00	40.00	35.00	35.00
Bulkhead (lump sum).....	500.00	500.00	500.00	450.00	800.00	300.00	300.00
150 ft. 16-in. c.i. pipe.....	4.00	4.00	3.75	3.50	4.50	4.00	3.00
10-in. pipe for C. B. connection.....	.....	80.00	.50	.58	1.00	.45	.50
Totals.....	\$84,191	\$83,980	\$80,779	\$70,715	\$69,543	\$60,953	\$80,913

Broad st., New York City, lowest bidder, \$845,188; work is as follows: Contract "A," building of approximately 200 lin. ft. reinforced concrete conduit, 15 ft. wide x 10 ft. 6 in. high, 9,450 lin. ft. of reinforced concrete conduit, 10 ft. 6 in. wide by an average of 9 ft. high, 964 ft. of brick concrete and terra cotta pipe drains from 5 ft. wide by 2 ft. high to 15 in. in diameter, together with manholes, catch basins, storm water inlets and the necessary timber and pile foundations; Contract "B," approximately 10,390 ft. lateral drains, consisting of brick and concrete and terra cotta pipe, from 4 ft. wide by 2 ft. 9 in. high to 12 in. in diameter, together with manholes, catch basins, storm water inlets and the necessary timber and pile foundation.

Syracuse, N. Y.—Installing 15-in. pipe sewer in Strong ave., Euclid ave. to Clarke st.: Phillips Thomas, \$1,167.75; C. J. Sullivan, \$1,598.50; Samuel Bonn, \$1,283.50; Chas. Bonn, \$1,283.50; P. R. Kiely, \$1,421; A. Sposato, \$1,107.50; C. T. Hookway, \$1,199; Jas. Swift, \$1,243.50; Albert Gaffey, \$1,132; in West Marcellus st.: P. Thomas, \$1,777.50; C. J. Sullivan, \$2,052; S. Bonn, \$1,634.56; C. Bonn, \$1,648.50; P. R. Kiely, \$1,888; A. Sposato, \$1,403; C. T. Hookway, \$1,684.50; J. Swift, \$1,773.75; A. Gaffey, \$1,522.25; Alexander Barr, \$1,567.

WATER SUPPLY

Portland, Ark.—City has selected Dickinson & Watkins, Little Rock, as engineers to supervise construction of proposed water works.

Sacramento, Cal.—Board of City Trustees has authorized City Engineer to prepare specifications for pump of 15,000,000 gals. capacity to be installed at the water works on Front and I sts.

Tracy, Cal.—F. C. Roberts, Consulting Engineer, 461 Market St., San Francisco, has estimated cost of construction of water system at \$30,000.

Grand Junction, Col.—Citizens will vote in spring on bonds; two propositions, either to purchase Kannah Creek water rights or sink sufficient artesian wells.

Washington, D. C.—General Bixby, Chief of Engineers, has recommended \$297,000 appropriation for improving water supply.

Chicago, Ill.—Commissioner of Public Works Mullaney will ask Council for \$60,000 appropriation for purchase and installation of two electrically-driven centrifugal pumps for South Ashland ave. station.

Wheaton, Ill.—Plans for construction of water supply and pumping system are being prepared by J. B. Ryder, New York; work includes 150,000-gal. reservoir, 75-ft. pump well, well pump and high-pressure distribution pump; an additional standpipe is proposed, and the pumping plant is to comprise gas producer and two gas eveners; for supply of 750,000 gals. daily, cost of steam plant is estimated at \$7,500 to \$8,800; with the producer plant cost would be about \$12,340 or \$13,500, if present standpipe is raised 45 ft. to give a higher pressure.—A. L. Webster, City Engineer.

Logan, Ia.—Council has authorized improvement of water supply source, extension of mains and erection of standpipe.

Cherryvale, Kan.—Residents are urging installation of better water supply.

Covington, Ky.—Citizens have voted \$100,000 bonds for construction of reservoir in Devon Park and to maintain park comprising 500 acres.

Pikesville, Ky.—Elkhorn Land Improvement Co. will construct water works at Elkhorn City.

Cumberland, Md.—If report of J. H. Fuertes, Engineer, New York, employed by Council to submit plan for proposed new water supply, be received in time, vote on the plan suggested will be taken at special election Jan. 10; project carries

with it bond issue of \$500,000, as authorized by last Legislature.

Lonaconing, Md.—Lonaconing Water Co. has engaged Fuller Bros., Frostburg, to construct concrete wall 100 ft. wide and 20 feet high in connection with improvement of water works.

Horner, Mich.—City has sold \$20,000 bonds for water works construction.

Easton, Minn.—Citizens will vote Dec. 15 on erection of modern steel tower and tank.

Madelia, Minn.—Council has decided to build water tank next spring and install six blocks of city water mains.

Motley, Minn.—Construction of elevated steel tank, capacity 15,000 to 100,000 gals., is being urged.

Kansas City, Mo.—Bids will be received Dec. 15 for \$500,000 water works bonds.—D. A. Brown, Mayor.

Manhattan, Mont.—C. M. Thorp, Bozeman, is preparing plans for construction of water works system.

Battle Creek, Neb.—Water works system will be installed.

Lodge Pole, Neb.—Hershey Welch, North Platte, and Thos. Potts, Denver, Engineers, are preparing estimates for installation of water works system.

Angola, N. Y.—Witmer & Brown, Hydraulic and Sanitary Engineers, Chapin Block, Buffalo, have been engaged to design and superintend the construction of water works system here.

Glendale, O.—Citizens have defeated proposition to issue \$15,000 bonds to improve water works.

McKeesport, Pa.—Board of Fire Underwriters has recommended laying of larger water mains and better high pumping service.

Huron, S. D.—L. P. Wolff, St. Paul, Minn., has been selected as Consulting Engineer for proposed water works improvements.—S. S. Oviatt, City Auditor.

Lake Preston, S. D.—Citizens have voted \$5,000 bonds for improvement of water works.

Nashville, Tenn.—Mayor H. E. Howse has recommended continued extension of water mains.

Dallas, Tex.—Park Board has decided to drill deep artesian well at Fair Park.

Dallas, Tex.—Board of City Commissioners has decided to build emergency pipe line from Trinity River up Pacific ave. to Harwood st.; pipe, engine and pump must be purchased.

Dallas, Tex.—Commissioner Harry L. Seay is urging establishment of high pressure mains in business district.

Dennison, Tex.—City Commission has rejected all bids for labor and material, excepting pipe, for improvements at water works.

Barre, Vt.—Citizens have voted \$45,000 bonds to complete construction of Orange Brook reservoir.

Leavenworth, Wash.—Citizens will vote on \$45,000 bonds for municipal water system.

Madison, Wis.—Engineer John F. Icke has recommended improvements at water works, including installation of two more pumps, one 3,000,000 and one 1,500,000-gal., cost \$15,000; construction of reinforcing main, cost \$7,500, and installation of stokers, \$3,500.

Gleichen, Alta., Can.—City will spend \$30,000 on water works and sewerage; plans prepared by Provincial Engineer R. B. Owen.

Pembroke, Ont., Can.—Ratepayers will vote on \$65,000 loan for extension of water works.

Smith Falls, Ont., Can.—Town Council is considering improvement of water works system at cost of \$10,000.

CONTRACTS AWARDED

Albertville, Ala.—To H. E. Taylor, Atlanta, Ga., for constructing water works system.

Oakland, Cal.—By Bay Cities Water Co., to Crane & Co., for 50 miles of 4 to 12-in. pipe.

Adel, Ga.—To J. B. McCrary Co., Atlanta, to extend water mains; cost \$8,000.

Brunswick, Md.—To Edw. S. Bobley & Bro., Frederick, for furnishing water pipe, hydrants, gate valves, etc., for water works improvements.

Minneapolis, Minn.—Furnishing two 20,000,000-gal. electrical pumps, to Henry R. Worthington Co., New York, \$28,612.

White Bear, Minn.—To M. T. Peterson for sinking artesian well.

Poughkeepsie, N. Y.—Furnishing 6 and 8-inch water pipe, to R. D. Wood & Co., Philadelphia, 200 tons, \$21.90 per ton by rail and \$21 by water.

Cincinnati, O.—Furnishing pipe for the Delhi water connection, to U. S. Cast Iron Pipe and Foundry Co., Chicago, Ill., \$42,369, and to Frank Burns for laying pipe, \$24,976.

West Carrollton, O.—To Fairbanks, Morse & Co., of Cincinnati, two triplex pumps, one 25-h.p. motor and one 25-h.p. gasoline

engine, \$3,079; to Ernest Kroemer, 647 Oak st., Dayton, pumping station, \$2,216; to J. Flocher & Son, Miamisburg, reservoir, 60c. per cu. yd. excavation and \$8.25 per cu. yd., concrete, and laying pipe, 28c. per ft.; and to U. S. Cast Iron Pipe and Foundry Co., Cincinnati, furnishing 8-in. c.-l. pipe, \$22.25 per ton.

Corsicana, Tex.—By Corsicana Water Supply Co., to American Well and Prospecting Co. for sinking of deep artesian well.

Port Arthur, Tex.—Building new reservoir for Port Arthur Water Co., to A. H. Scott.

LIGHTING AND POWER

Portland, Ark.—City will construct electric light plant.

Chico, Cal.—Third Ward Improvement Club is urging improved lighting service west of railroad tracks.

Chico, Cal.—City Trustees will at once ask bids for city lighting.

Willows, Cal.—Town Trustees have granted Northern California Power Co. permission to install complete gas system; work must be started within 30 days.

New Haven, Conn.—Installation of a 300-kw. rotary converter is being considered by the Shore Line Electric Railway Co. at its power house in Waterford; company will supply electricity to New London and East Lyme Street Railway.

Selbyville, Del.—Town Council has granted franchise to an electric light company to erect poles and string wires.

Washington, D. C.—Capital Traction Co. is considering plans for construction of a power house on 36th st. and M st.

Saybrook, Ill.—Plant of Saybrook Electric Light and Power Co. has been destroyed by fire.—R. G. Cooper, Manager.

Colfax, Ind.—Installation of municipal electric light plant is being considered.

Red Oak, Ia.—Red Oak Electric Co. will build line to Stanton.

Lexington, Ky.—A. G. Morgan, 244 N. Broadway, and others are considering construction of electric light plant.

Baltimore, Md.—Consolidated Gas, Electric Light and Power Co., Continental Bldg., is considering erection of addition to substation on McClellan's alley.

Haverhill, Mass.—Citizens are considering installation of municipal electric lighting plant; Legislature will be asked to pass legislation to enable city to establish plant without being compelled to purchase existing plant.

Muskegon, Mich.—City will install municipal electric light plant.—Harry Reitdyk, Mayor.

Minneapolis, Minn.—Geo. K. Griffith, Pipestone, has been granted franchise to install electric light plant.

Moose Lake, Minn.—Franchise has been granted to Cloquet Electric Co. to extend wires from Cloquet to this city.

Thief River Falls, Minn.—City is having plans prepared for dam across Red Lake River; city owns own electric light plant and power house is on leased property; intention is to move power house to new dam and install plant sufficiently large to supply city with all electric light and power which may be required.

Hattiesburg, Miss.—Council has granted franchise to W. S. F. Tatum and W. O. Tatum to construct electric light and power plant.

Irondale, Mo.—James P. Ward, Construction Engineer, is planning construction of water-power-electric plant in connection with electric railway.

Culbertson, Mont.—W. E. Pierce has asked for franchise to install electric light plant.

Musselshell, Mont.—Handel Bros. are interested in proposed installation of electric light plant; capacity 600 32-c.p. lamp.

Mendham, N. J.—Borough has decided to have electric lights installed.

Pearl River, N. Y.—Taxpayers are considering election on establishment of lighting district.

Rochester, N. Y.—Council will consider suggestion of Superintendent Yawger of the Rochester Railway and Light Co. that instead of iron poles in Main st., which support two of the pearl lights, special ornamental poles, fitted with five Mazda lamps each, be substituted.

Solvay, N. Y.—Village Trustees are considering reopening of abandoned lighting plant; bids have been asked for installation of dynamo and overhauling of plant.—Edwin Hall, Clerk.

Syracuse, N. Y.—Syracuse Lighting Co. has secured the right to furnish light and power to the villages of Camillus and Solvay.

Warrenton, N. C.—Construction of municipal electric light plant is being considered.—J. H. Bridges, Henderson, Consulting Engineer.

Girard, O.—Present street lighting contract with Youngstown Consolidated Gas

and Electric Co. will expire early in January.

Dallas, Tex.—Secretary Babcock of the Chamber of Commerce has asked City Commissioners to appropriate \$2,088 toward Elm st. ornamental lighting project.

Denison, Tex.—Park Board has decided to install lights for walks through downtown park.

Herndon, Va.—J. Harrison Yates is interested in proposed construction of electric lighting plant for 1,000 population; machinery not yet purchased.

Charleston, W. Va.—Kanawha Water and Light Co. has ordered plans prepared for complete rewiring of business district of city and buildings supplied with current.

Endeavor, Wis.—Endeavor Electric Light and Power Co. is planning to install power plant in Valders.

Maiden Rock, Wis.—Establishment of electric light system is being considered.

Kingston, Ont., Can.—Light, Heat and Power and Fire and Light Committees have recommended by-law to expend \$13,000 in improving street lighting system.

Stratford, Ont., Can.—Ratepayers will vote on \$41,160 by-law for electric light purposes.

Coquitlam, B. C., Can.—Ratepayers have passed by-law granting franchise to Western Canada Power Co. to run power lines through this municipality.

Rouleau, Sask., Can.—Construction of \$60,000 electric light plant is being considered.—J. D. Whitmore, Regina, Engineer; W. H. Stewart, City Secretary-Treasurer.

CONTRACTS AWARDED

Orland, Cal.—To Northern California Power Co. for supplying street lights for business section.

Cairo, Ga.—To J. B. McCrary & Co., Atlanta, for improvements to municipal electric light plant.

Marseilles, Ill.—By Northern Illinois Light and Traction Co., for construction of hydro-electric power plant, to the L. E. Myers Co., Railway Exchange Bldg., Chicago, Ill., about \$300,000; proposed plant will supply electricity for operating railway system of the Northern Illinois Light and Traction Co. in Northern Illinois.

Fort Dodge, Ia.—Lighting streets for five years, to Fort Dodge Light and Power Co.; renewal.

Fairmont, Minn.—By Electric Light and Water Commission, to Minneapolis Steel and Machinery Co., Minneapolis, for 400-h.p. engine, \$21,985, and to Allis-Chalmers Co. for pump, motor, etc., \$2,885.

Brookhaven, Miss.—To Harrisburg Engine Works for furnishing and erecting one compound condensing high speed 200 R. P. M. Corliss valve type engine for direct connection to 200 K. V. A. alternator, steam consumption stated for operating $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ loads at 90 per cent P. F., 24-in. vacuum, 140 lbs. steam, \$5,681.

Columbia, S. C.—To Cruse-Camper Co., Philadelphia, Pa., for construction of gas container for Columbia Gas Light Co.; cost about \$27,000.

Rock Hill, S. C.—Equipment for municipal electric plant; generators, transformers and similar supplies, to Westinghouse Co.; poles, to Charlotte Supply Co.; wire and cross-arms, to Southern Electric Co.

Tacoma, Wash.—Furnishing 40,000 lbs. W. F. copper wire for light department, to F. H. Godfrey, \$6,140.

FIRE EQUIPMENT

Texarkana, Ark.—East and West Side municipalities will jointly purchase auto equipped with chemicals for Fire Chief Hussey.

Meriden, Conn.—Fire Chief Owen Moran has recommended purchase of more motor-driven vehicles, suggesting combination hose car and chief's car.

Michigan City, Ind.—Council has failed to pass ordinance appropriating \$5,000 for purchase of auto truck.

Oakley, Ky.—Purchase of 500 ft. of fire hose has been recommended by Fire Chief Fred Schmidt.

Baltimore, Md.—Chief Horton, Commissioner Shaw and Secretary Wilkinson, of Fire Board, will inspect the fire department of New York City; particular attention will be paid to the efficiency of automobile hook and ladder trucks.

Charlton City, Mass.—Purchase of village truck is being considered; Alderman Bemis is interested in matter of better fire protection.

Saugus, Mass.—Fire Committee is considering erection of central house.

Springfield, Mass.—Residents of town of Merrick are considering purchase of auto engine.

Taunton, Mass.—Committee on Fire and Wires has been instructed to purchase chemical and hose auto; cost \$5,500.—Edwin A. Tetlow, City Clerk.

Rochester, Minn.—Purchase of chemical engine has been recommended.

Alton, Mo.—Fire Committee is considering purchase of two auto hose trucks and erection of two fire stations.

Cairo, Neb.—Purchase of equipment is being considered.

Bogota, N. J.—Site has been purchased for erection of engine house.

Newton, N. J.—Town Committee is considering installation of automatic fire alarm system.

Orange, N. J.—Fire Board has decided to at once purchase fire hose.

Rahway, N. J.—Ordinance passed by Council providing for bond issue for the purchase of new steam horse-drawn fire engine for Franklin Hose Co. has been vetoed by Mayor William Howard.

Dunkirk, N. Y.—Architect H. P. Beebe, Fredonia, has completed plans for erection of \$80,000 fire house and city hall.

Ironton, O.—Citizens will vote on \$30,000 bonds for fire protection.

Portland, Ore.—Rose City Park district is urging purchase of site and erection of fire station at total cost of \$6,000.

Conway, Pa.—Council will purchase site for erection of hose house, town hall and jail.—C. R. Bruce, President.

McKeesport, Pa.—National Board of Fire Underwriters has recommended purchase of steam fire engine and new apparatus for different departments.

Oil City, Pa.—City Property Committee has recommended that hose tower and building with store room for fire department and quarters for police and Street Commissioner be erected at Short and East 2d st.

Richmond, Va.—City will purchase \$8,000 auto fire engine.

CONTRACTS AWARDED

Freeport, Ill.—To Seagrave Co., Columbus, O., for combination hose and chemical wagon, with 40-gal. chemical cylinder, etc., \$1,200; to Voorhees Rubber Co., Chicago, H. L. Bremis, representative, for 1,000 ft. fire hose at \$1 per ft.

Bismarck, N. D.—City Commissioners have ordered an American-La France hose wagon.

Chattanooga, Tenn.—Construction of stable at Ninth Ward fire hall, to Chambers & Son, \$1,329.

Fort Worth, Tex.—Construction of addition to headquarters station of fire department, to S. A. Tomlinson, \$5,665.

BIDS RECEIVED

Providence, R. I.—Combination automobile chemical engine and hose wagon for the fire department: D. P. Nichols Co., Boston, \$4,750, and alternate of \$4,000; American-La France Fire Engine Co., Elmira, N. Y., \$5,500; Knox Automobile Co., \$5,500, and an alternate of \$5,000; Rhode Island Motor Car Co., \$4,600; Combination Ladder Co., Providence, \$4,599, and alternates of \$4,099 and \$4,999; Kanawha Chemical Fire Extinguisher Co., New York, \$5,500, and alternates of \$5,550 and \$5,025; for hook and ladder truck: American-La France Fire Engine Co., \$5,500; Combination Ladder Co., \$5,500.

BRIDGES

Hartford, Conn.—City Plan Commission has decided to construct bridge connecting Riverside st. with Pope Park.—F. L. Ford, City Engineer.

Denver, Col.—Park Board has ordered replacing of all wooden bridges over City Ditch, Washington Park, with reinforced concrete structures.

Washington, D. C.—General Bixby, Chief of Engineers, has recommended repair of aqueduct bridge; three plans are proposed: (a) for complete removal of the present bridge and replacing it with a new one, including new superstructure, \$950,000; (b) for complete removal of the remaining five old piers and replacing them with new ones and repairing the abutments, using the present superstructure, \$350,000; (c) for thoroughly and permanently repairing the remaining five old piers and two abutments, using the present superstructure, \$150,000.

Atlanta, Ga.—City is considering construction of viaduct over Southern Railway crossing at South Pryor st.—R. M. Clayton, City Engineer.

Lagrange, Ind.—County Council has appropriated \$12,409 for bridges over new Fly Creek ditch.

Coffeyville, Kan.—Santa Fé System is preparing to replace Verdigris River bridge with heavier structure.

Hutchinson, Kan.—To Charles Everett for building two concrete bridges in Haven Township and one in Plevna Township at aggregate cost of \$890.

Easthampton, Mass.—State Highway Commission has filed plans for change in

grade at Mt. Tom; arch concrete bridge will be built; cost, including land, damaged, \$27,242.

Escanaba, Mich.—Board of Road Commissioners of Delta County are asking for bids for concrete bridge to span Escanaba River at Wells.

St. Paul, Minn.—Assembly Committee on Streets has reported favorably on a resolution authorizing City Comptroller to set aside \$2,400 for bridge across the railroad tracks at Hamline ave.

Omaha, Neb.—Council has passed ordinance ordering construction of viaduct over tracks on 11th st.; cost \$80,000.

Muskogee, Okla.—County has voted \$150,000 bonds to building 33 bridges.

Tulsa, Okla.—City and Tulsa County will be asked to join with Oklahoma Union Traction Co. in building bridge over Arkansas River.

Allentown, Pa.—Board of Commissioners of Lehigh County has rejected all bids for widening Hamilton st. bridge; new bids will be asked.

Bentleyville, Pa.—Grand Jury has approved construction of concrete and steel bridge; cost \$4,796.

Beaver Falls, Pa.—Trustees have recommended erection of bridge in Economy Township.

Columbia, S. C.—Columbia Township will vote on \$75,000 bonds to erect bridges across Congaree and Broad Rivers.

Coleman, Tex.—Commissioners' Courts of Coleman and McCulloch Counties will erect two concrete and steel bridges over Colorado River at cost of \$37,350.

Dallas, Tex.—County will ask for bids for erecting three bridges over Trinity River; cost about \$75,000.

Owen Sound, Ont., Can.—Town Engineer Macdowall has estimated cost of construction of 10th st. bridge, 66 ft. wide with 42-ft. roadway, for concrete arch, \$17,000; steel truss, \$19,700.

CONTRACTS AWARDED

Anniston, Ala.—To Fred Laudt, city, for erection of concrete bridge over Morrisville road.

Ukiah, Cal.—To the Mervy-Elwell Co., East Oakland, for construction of a 460-ft. bridge over Russian Gulch, \$7,340.—E. H. White, Deputy County Clerk.

Peoria, Ill.—Building two bridges in Radnor and Logan Townships, to Joliet Bridge Co., Joliet, \$1,674 and \$2,174.

Springfield, Ill.—To Frank Miller for construction of bridge across Spring Creek, \$3,490.

Paoli, Ind.—Building concrete bridge, to International Steel and Iron Construction Co., Evansville, \$2,662.

Burlingame, Kan.—To Topeka Bridge and Iron Co., for concrete arch bridge over Switzer Creek, \$2,145.

Rozel, Kan.—To Topeka Bridge and Iron Co., for 80-ft. reinforced concrete arch bridge over Pawnee River.

BIDS RECEIVED

New York, N. Y.—Constructing elevators, stairs, drainage, ornamental and electrical work for anchor piers of the Queensboro Bridge over East River, between the Borough of Manhattan and Queens, and the following are the totals of bids received: Concord Construction Co., \$76,275; J. M. Knopp, \$82,931; Chas. Hille, \$78,097; Williams & Son, \$53,700; Thos. J. Beckley Construction Co., \$79,099; Chas. Henderson, \$65,000; Kelly & Kelly, \$75,667; Snare & Triest Co., \$75,770; North Eastern Construction Co., \$76,170; L. Wehsler, \$66,500.

San José, Cal.—Reinforced concrete bridge over Los Gatos Creek at Lincoln ave.: (a) concrete rail, (b) iron rail: John Doyle, (a) \$4,950, (b) \$4,850; Nott & Monzinger, (a) \$5,775; J. W. Williams, (a) \$5,546; L. M. Scott, (a) \$4,750, (b) \$4,700; John McReynolds, (a) \$4,129, (b) \$3,979.

MISCELLANEOUS

Los Angeles, Cal.—Park Commission will build \$10,000 comfort station, using park laborers, and purchasing material through supply department.

South Pasadena, Cal.—City Trustees will at once ask bids for erection of \$15,000 city hall.

Trinidad, Col.—Board of County Commissioners is considering purchase of auto.

Fair Haven, Conn.—City will issue bonds for improvements.

Washington, D. C.—Major Richard Sylvester, Superintendent of Police, has recommended erection of police station in northwest section, also establishment of inebriate hospital.

Augusta, Ga.—Bids will be advertised for in about 30 days for rip-rapping river bank from Hawk's Gully to Center st.

Washington, Ga.—Wilkes County Commissioners will invite architects to submit

plans and estimates for fireproof jail. J. W. Callaway, Commissioner of Roads and Revenue, is interested.

Moline, Ill.—Council has decided to ask for plans for erection of \$100,000 city hall.

Mt. Carmel, Ill.—Citizens have voted \$7,000 bonds to erect city hall.—C. M. Feezer, City Clerk.

Indianapolis, Ind.—Brubaker & Stern, architects, who have been asked by Mayor Shank to prepare plans for new buildings for fire headquarters, police headquarters, city dispensary and a municipal garage, have estimated cost as follows: Police headquarters, three-story building, \$80,000; fire headquarters, two-story building, \$20,000; city dispensary, two story building, \$10,000, and garage, one-story building, \$3,000.

Misnawaka, Ind.—City needs police alarm system and patrol wagon.—Harvey Frick, Chief of Police; J. A. Herzog, Mayor.

Oakland City, Ind.—Council has rejected all bids for erection of city building; new bids will be asked.

Rockville, Md.—Montgomery County Commissioners are considering erection of jail.

Lawrence, Mass.—Board of Aldermen has adopted recommendation of Committee on Streets empowering Superintendent of Streets to purchase auto truck.

Lowell, Mass.—Mayor Meehan has signed ordinance to create commission to erect contagious hospital.

Lansing, Mich.—Council has instructed Purchasing Committee to secure three snow plows subject to approval.

Duluth, Minn.—Council has authorized Assessor J. A. Scott to advertise for bids for cards and steel cases needed for the new card system which he proposes to install in Assessor's office.

Madison, Neb.—Madison County Commissioners have not as yet let contract for erection of brick addition to county jail.—S. R. McFarland, County Clerk.

Elizabeth, N. J.—Council has adopted ordinance for erection of \$7,500 barn on almshouse property.

Jersey City, N. J.—Police Board will ask \$300,000 bond issue for police headquarters building.

Montclair, N. J.—Council is considering purchase of site on North Fullerton ave. for garbage incinerator.

Ventnor City, N. J.—Bids will soon be received for the construction by city of public pier.

Buffalo, N. Y.—Commissioner of Public Works Francis G. Ward will soon ask for bids for sand-blast machine or machines for cleaning structural steel of the city's viaducts and bridges.

Dunkirk, N. Y.—Architect H. P. Beebe, Fredonia, has completed plans for erection of \$80,000 city hall and fire house.

New York, N. Y.—Commissioner Drummond is urging purchase of site on Noble st. for erection of proposed Greenpoint Emergency Hospital.

Niagara Falls, N. Y.—Bids will soon be called for auto police patrol.

Cincinnati, O.—Council will consider purchase of auto for Street Cleaning Department at cost of \$4,500.

Cincinnati, O.—Improvements in way of shelter houses, comfort stations and band stands in existing parks soon will be authorized by Park Commissioners; cost \$100,000; plans by Park Expert Kessler.

Cincinnati, O.—Board of Library Trustees are urging purchase of site at 8th st. and Glenway ave. for proposed Carnegie branch library.

Toledo, O.—Mayor Whitlock has approved legislation passed by Council to expend \$2,000 in Walbridge Park for retaining wall to protect building of Maumee River Yacht Club house.

Toledo, O.—Council has instructed Service Director Cowell to secure bids for services of ice breaking tug to keep Maumee River channel open during winter season.

Dalles, Ore.—Wasco County is considering erection of court house.

Portland, Ore.—William McMasters, C. B. Moores, Ben Selling, F. W. Mulkey and Henry L. Corbett have been appointed members of Public Dock Commission, to expend \$2,500,000 in providing municipal docks.

Conway, Pa.—Council will purchase site for erection of town hall, hose house and jail.—C. R. Bruce, President.

Oil City, Pa.—City Property Committee has recommended erection of quarters for Police and Street Commissioners, with hose tower and store room at Short and East 2d st.

Pittsburg, Pa.—City is preparing to build city hall in Diamond Square.—Jas. G. Armstrong, Director of Public Works.

Nashville, Tenn.—Mayor H. E. Howse has recommended purchase of two flushing machines at cost of \$2,400; also erection of addition to city hospital and new market house, installation of garbage incinerator, remodeling of work house and purchase of auto patrol.

Comanche, Tex.—Old city hall has been destroyed by fire.

Fort Worth, Tex.—Fire Chief Biddeker is favorable to establishment of chain of artificial lakes throughout State, utilizing canyons and other depressions.

Morlin, Tex.—Council is considering erection of crematory for burning trash and street sweepings.—Dr. S. S. Munger, City Health Officer.

Sherman, Tex.—John S. Kerr, landscape architect, is preparing plans to convert Court House sq. into park; work will begin at once.

Temple, Tex.—Council is considering feasibility of establishing crematory for disposal of garbage and general refuse.

Richmond, Va.—Street Cleaning Committee has recommended construction of city stables at cost of \$10,000.

Morgantown, W. Va.—Erection of city building is being urged.

Milwaukee, Wis.—Metropolitan Park Commission will recommend purchase of addition to Sherman Park for playground and school purposes.

Stratford, Ont., Can.—Ratepayers will vote on by-laws carrying \$10,000 for park improvements and \$15,000 for market building.

CONTRACTS AWARDED

San Francisco, Cal.—Constructing North Beach Station at Taylor and Bay sts. and Islais Creek station at Kansas and Army sts., of the municipal incinerator plants, to Destructor Co., \$255,216.

New Albany, Ind.—Collecting garbage from streets and alleys for one year to Wm. H. Newhouse, \$4,000.

Des Moines, Ia.—Roofing city hall with asphalt, to Lewis Roofing Co., Moline, Ill., \$5,000.

Fort Scott, Kan.—Erecting scale house, to James Boring.

Boston, Mass.—Removal of snow in District No. 3, to Mark K. Lynch, 32c.

Bay City, Mich.—Building detention hospital; stone work to Bay City Stone Co., \$9,391; heating to Ideal Plumbing & Heating Co., \$1,425; plumbing to Bay City Plumbing Co., \$850, and the electric wiring to Affleck Electric Co., \$184.

Elizabeth, N. J.—By Board of Aldermen, for completion of city recreation pier located on Staten Island Sound at Elizabethport, to B. H. Brooke & Co., Manhattan, \$11,103.

Rochester, N. Y.—Removing snow, 103 contracts, 86 individual streets, 17 groups: Group 1, to George Bantel's Sons, \$4,195.99; group 2, to John M. Dunn, \$250.20; group 3, to C. W. Hartung, \$377.73; group 4, to August Kimmel, \$959.53; group 5, to C. W. Hartung, \$588.18; group 6, to John Stubbe, \$420.85; group 7, to W. H. Sours, 2d, \$376; group 8, to John Stubbe, \$490.07; group 9, to H. A. Sours, \$1,451.40; group 10, to Julius Frederichs, \$368.98; group 11, to Frank Duffy, \$490.95; group 12, to August Kimmel, \$112.05; group 13, to H. J. Morgan, \$673.45; group 14, to H. J. Morgan, \$604.22; group 15, to R. E. Yoeman, \$216.18; group 16, to J. Frederichs Co., \$240.40; group 17, to John M. Dunn, \$285.76.

Syracuse, N. Y.—Building addition to City Hospital to Gorman Bros., \$24,000.

Philadelphia, Pa.—Grading in connection with elevation of the tracks of the Port Richmond branch of Philadelphia and Reading Railway Co., to James D. Dorney, 1227 East Berks st., \$284,423.15, for making a depression of 10 ft. in Frankford and Lehigh aves. and adjacent streets which will pass under the elevated railroad tracks; to McNichol Paving and Construction Co., 19th and Westmoreland ave., for changing grade of Kensington and Lehigh aves. and adjacent streets, \$198,707.

Houston, Tex.—Auto for Superintendent of Road Work, to C. A. Burton & Co., \$1,500 for a Chalmers machine.

Seattle, Wash.—Boiler for garbage incinerator, to Chas. C. Moore & Co. (Babcock & Wilson Co.), \$3,817.41.

Charlottetown, P. E. I., Can.—To J. M. Clark, Summerside, for erection of Queen's County jail.

BIDS RECEIVED

New Haven, Conn.—Collecting garbage during two years: District A, A. N. Farnham, \$7,000; District B, A. N. Farnham, \$5,350; Robert D. Daly, \$5,580; District C, Robert D. Daly \$6,000, L. U. Pringle, \$8,000.

Cincinnati, O.—Removing Sand creek dike, in Ohio River, and dredging channel at that point, Monongahela and Western Company of Pittsburgh, \$11,167.50; Sheridan-Kirk Company, \$27,020; Ohio River Contract Company, Evansville, \$21,750.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Oklahoma.....	Oklahoma City.....	Dec. 12.....	Paving Exchange Place with asphalt on 5-in. concrete base..	Bob Parman, City Clerk.
Minnesota.....	St. Paul.....	Dec. 12, 2 p.m.....	Grading an alley in block 2, Haldeman's Addition.....	L. W. Rundlett, City Engineer.
Texas.....	Abilene.....	Dec. 13.....	Constructing cement sidewalks on N. Third st.: also busi. sec.	J. A. Pratt, City Secretary.
New York.....	New York.....	Dec. 14, 10:30 a.m.....	Repairs to asphalt at var. fire houses in Manh. and Bronx Boros.	R. Waldo, Fire Commissioner.
Connecticut.....	Waterbury.....	Dec. 14.....	Bl'g. 14,000 ft. of Meriden road; probably Telford.....	Clk. Nichols, St. Hwy. Dept., Htfd.
Ohio.....	Greenville.....	Dec. 14, noon.....	Grading and macadamizing 1.5 miles, 2 twps., cost \$9358..	State Hwy. Comr., C. of Co. Comrs.
New York.....	New York.....	Dec. 15, 3 p.m.....	Pav. with asphalt block road No. 2 crossing Central Park.....	C. B. Stover, Pres. Park Board.
Texas.....	El Paso.....	Dec. 15.....	Paving South Santa Fe street.....	Mayor Kelly and City Council.
Ohio.....	Woodsfield.....	Dec. 20, 10 a.m.....	Grading and macadamizing 1 mile, Canton twp., cost \$8357..	State Hwy. Comr., C. of Co. Comrs.
Florida.....	St. Augustine.....	Dec. 21, 6 p.m.....	Brick, bituminous or asphalt pav., curb, grade, Orange st.....	Jno. M. G. Carrera, City Clerk.
Indiana.....	Covington.....	Dec. 23, 11 a.m.....	Improv. highway on line divid. Fountain and Montgomery Cos.	W. B. Gray, Aud. Fountain County.
Ohio.....	Circleville.....	Jan. 3, noon.....	Brick paving Court st.: 41,883 sq. yds. on 6-in. concrete base, 2-in. sand cushion, cement or asphalt filler; 16,540 ft. straight and 940 ft. circular Berea curb; 1,670 ft. stone edging; 24,636 cu. yds. excav; 528 ft. 24-in. and 615 ft. 18-in. sewer, 10 catch basins, 4 manholes, etc.....	John W. Lowe, Dir. Pub. Serv.
Missouri.....	St. Louis.....	Jan. 10.....	Constructing a municipal asphalt plant.....	W. B. Dryden, Secy. Bd. Pub. Imp.
SEWERAGE				
Michigan.....	Kalamazoo.....	Dec. 12, 5 p.m.....	Constructing Fulford st. sewer; hoe labor must be employed..	H. A. Johnston, City Engineer.
Ontario, Can.....	Toronto.....	Dec. 13.....	Furn. 303 ft. 60-in. riveted steel pipe for outfall sewer.....	Mayor G. R. Geary, Chm. Bd. Cont.
New York.....	New York.....	Dec. 13, 11 a.m.....	Bl'g. sewer 7 ft. 9 in. x 8 ft. and smaller in Westchester ave. and Square; inc. 21,500 cu. yds. all kinds excav.; 16,000 lbs. steel bars, etc.....	C. C. Miller, Pres. Bronx Boro.
owa.....	Sutherland.....	Dec. 31.....	Constructing 850 ft., 8-in. sewer with 4 manholes in Pine st.....	A. H. Schultz, City Clerk.
WATER SUPPLY				
Nebraska.....	Stratton.....	Dec. 9, 1 p.m.....	Constructing a complete system of water works, \$200 check..	Fred Shotbolt, Village Clerk.
Ohio.....	Canton.....	Dec. 14.....	Bldg. 1,000,000-gal. steel reservoir; furn. 2,000,000-gal. double-acting triplex power pump, con. to 150 kva. a.c. generator and exciter with switchboard, also condenser for engine, set up; also 325 h.p. engine and 250 kva. a.c. generator, gas generators and engines for above sizes; furn. 30 fire hydrants, 27 gate valves, drill 6 and 8-in. wells, etc.....	Ray F. Harbert, Dir. Pub. Serv.
Illinois.....	Lombard.....	Dec. 15, 4 p.m.....	Furn. material and bl'g. connected system of c.i. water mains with necessary specials, hydrants, valves and boxes and connections.....	S. J. Lumbard, Pres. Bd. Loc. Imp.
North Dakota.....	Fargo.....	Dec. 19, 5 p.m.....	Constructing 1315 ft. of 6-in. water main.....	E. R. Orchard, City Auditor.
BRIDGES				
Massachusetts.....	Boston.....	Dec. 12, noon.....	Repairing Neponset bridge over Neponset river.....	Louis K. Rourke, Supt. of Streets.
Oregon.....	Portland.....	Dec. 30.....	Bldg. substructure of Broadway bridge, cost \$490,000, piers and approaches, \$60,000 additional; plans for superstructure being prepared.....	Mayor Simon and City Exec. Bd.
Arkansas.....	Piggott.....	Jan. 5.....	Erecting a bridge over Black river.....	B. B. Hollifield, Rector, Co. Judge.
Virginia.....	Richmond.....	Feb. 1, 4 p.m.....	Plans, designs, detailed drawings, strainsheets, specifications and proposals for \$225,000 rein. concrete bridge over James ri.	Charles E. Bolling, City Engineer.
MISCELLANEOUS				
New York.....	Rochester.....	Dec. 12 noon.....	Furnishing 500 park seats.....	Wm. S. Riley, Chm. Pur. Com. P. B.
New York.....	New York.....	Dec. 15, 3 p.m.....	Furn. two 2-horse street sweepers for Bronx parks, also 430 cu. yds. clay loam and 500 bbls. Portland cement for Bronx Parks.....	C. B. Stover, Pres. Park Board.
New York.....	New York.....	Dec. 15, 3 p.m.....	Furn. extruded brass for American Museum of Nat. History.....	C. B. Stover, Pres. Park Board.
Texas.....	Waco.....	Dec. 16, 11 a.m.....	Furn. 3,500 ft. 2.5-in., 4-ply cotton fire hose; spec. with bl's.....	John F. Wright, Fire Commissioner.
New York.....	St. George, S. I.....	Dec. 27, noon.....	Furn. and install furnaces, steam boilers, etc. of Clifton destructor; plans require high temperature refuse destructor of 2 units each of 45 tons capacity per 24 hours; \$30,000 security.	George Cromwell, Boro. President.
Ontario, Can.....	Sault Ste. Marie.....	Jan. 2, noon.....	Bl'g. roadbed and structures of 2 sections Man. & N. Shore Ry.	R. S. McCormick, Ch. Engr. Manitoulin and North Shore Railway.

STREET IMPROVEMENTS

Cullman, Ala.—Citizens are considering further building of sidewalks and paving of streets.

San Francisco, Cal.—Board of Supervisors has decided to curb and pave crossings on Army and Shotwell sts., Kansas and Sixteenth and other streets; grade portions of two streets; construct granite curbs and basalt block gutters on Mississippi st., and artificial sidewalks on six streets.

Denton, Md.—Engineer H. Royston Abderdon is surveying State Shoemaker road from the corporate limits of Denton on west to Willow Pond, on Tuckahoe Neck main highway about two miles from town.

Kansas City, Mo.—Board of Public Works has adopted plans for paving portions of three streets with asphalt and Jackson st. with concrete.

Harrisburg, Pa.—State Superintendent of Highways J. W. Hunter will urge \$3,000,000 appropriation for State highways.

Alexandria, Va.—Finance Committee is considering \$5,000 appropriation for street and sewer work.

CONTRACTS AWARDED

Los Angeles, Cal.—Improving portion of Bellevue ave., to T. H. McGowan, \$5,283; paving Hoover st. with asphalt, to Fairchild-Gilmore-Wilton Co., Pacific Electric Bldg., about \$13,500.

Dallas, Tex.—To Texas Bitulithic Company, for paving Grand ave., Ervay to Holmes, Grand to Pennsylvania, \$2.30 per ft., including five years' maintenance.

SEWERAGE

San Francisco, Cal.—Board of Supervisors has decided to construct sewers on portions of three streets.

Bloomington, Ill.—City is planning to lay 1000 ft. of 4-ft. brick sewer.—E. Folsom, City Engineer.

St. Cloud, Minn.—City Engineer S. S. Chute has prepared plans for construction of sewer system No. 5.

St. Louis, Mo.—Board of Public Improvements has again asked for bids on Harlem Creek sewer.

Columbus, O.—State Board of Health will now force all Ohio cities not having disposal plants to erect them at once; Greenville, Alliance and Niles are affected.

Alexandria, Va.—Finance Committee is considering \$5,000 appropriation for sewer and street work.

Huntington, W. Va.—Residents of Fourth Ward are urging construction of additional sewers.

CONTRACTS AWARDED

Peoria, Ill.—Building sewers to Ottawa Construction Co., Ottawa; Second District, \$30 809.34; Third District, \$60,953.84.

Enid, Okla.—Sewer work, to A. N. Heaney; Elm st. storm sewer, \$13.50 per ft.; lateral sewer in Dist. No. 45, \$11.30 per ft.

WATER SUPPLY

Long Beach, Cal.—Long Beach Water Company will soon begin extensive improvements, laying 12-inch pipe line between American and Elm avenues, Tenth to Fourth streets, another from Tenth st. and American ave. to Magnolia ave., and a third from Tenth st. and Magnolia ave. to Fourth st.; will cost about

\$15,000; company also will lay a 15-in. steel pipe line from citizens' wells to its main pumping plant on Signal Hill, a distance of one mile; cost, \$5000.

Riverside, Cal.—Riverside Heights Water Co. has been organized to build reservoir to supply water to residents of east side. A. S. White, W. A. Hoya and others are interested.

Whittier, Cal.—Potrero Heights Water Co. will soon let contract for pumping station and pump house; cost \$15,000.—Turner Bros., Engineers; B. F. Arnold, 123 S. Broadway, Los Angeles, Secretary.

Denver, Col.—Denver Union Water Co. will build pumping station for South Denver water supply system.

Olathe, Col.—Preliminary estimates have been prepared by C. H. Lethman, Denver, for proposed water works to cost about \$58,000.

Bloomington, Ill.—City is planning to lay 7,000 ft. of 20-in. water mains.—E. Folsom, City Engineer.

Moline, Ill.—Council is preparing to extend water service.

Columbus Junction, Ia.—Construction of water works is being considered; engineer not yet chosen.

Newton, Kan.—City will expend about \$25,000 for water works extension.—J. Dunkelberger, Mayor.

North Mankato, Minn.—Village is considering \$20,000 bond issue for installation of municipal water works system.

Albany, N. Y.—Plans for improvements entailing expenditure of \$4,588,000 for construction of storage reservoir at Portage above Letchworth Park, on the Genesee River, have been adopted by State Water Supply Commission.

Ada, Okla.—Bids will be received about Jan. 15 for construction work in connection with securing of new water supply.—Ekman & Tolbert, Engineers; W. B. Jones, City Clerk.

Fort Worth, Tex.—Bids will be asked in near future by Polytechnic City Commission for franchise for installation of water works system; plans by Engineer Mead, of the North Side.

LIGHTING AND POWER

New Brunswick, N. J.—Albany st. business men are considering installation of white way.

Milford Square, Pa.—Citizens have petitioned for extension of gas mains.

Providence, R. I.—Professor Harry E. Clifford, Harvard University, has recommended standardization of type of lamp in vogue in city, better distribution of lights and making of ten-year contract.

Egan, S. D.—Citizens are considering election on bonds for electric light plant.

Stoughton, Wis.—City has purchased dam and water power rights of Stoughton Milling Co., and will spend \$8,000 in spring on repairs and install own machinery.

FIRE EQUIPMENT

Bay Minette, Ala.—Need of additional fire apparatus is being urged.

San Francisco, Cal.—Fire Commissioners are urging need of fire house in Excelsior District.

New Haven, Ill.—Town practically destroyed by fire; no fire protection.

Millville, N. J.—Residents of West Millville are urging establishment of hose house.

BRIDGES

Bridgeport, Conn.—Construction of bridge on E. Washington ave. is being considered; cost \$50,000.

Drayton, N. D.—Bridge, cost \$50,000, will be erected across Red River; city and county interested.

Norristown, Pa.—Philadelphia & Western Railroad Co., recently granted franchise by Town Council, will erect bridge over Schuylkill River.

Providence, R. I.—Board of Aldermen has appropriated \$16,000 for repairing Crawford st. bridge.

Lynchburg, Va.—Plans for \$200,000 reinforced concrete bridge over James River, connecting Lynchburg with Amherst County, have been finished by Municipal Engineering Department, and will be submitted to Street Committee; bridge will be 1,081 ft. long, with approaches aggregating 300 ft., and 60 ft. above low water.

MISCELLANEOUS

Chico, Cal.—City Trustees will receive plans about Jan. 3 for erection of two-story \$32,000 city hall at 5th and Main sts.

Lodi, Cal.—City Trustees have rejected all bids for installation of electric light plant; specifications will be amended to provide for use of material of cheaper quality; \$4,000 available.

San Francisco, Cal.—Public Buildings Committee has recommended receiving of plans for erection of permanent city hall at McAllister and Larkin sts. and City Hall ave.

Denver, Col.—Park Commission is considering plan for extensive beautification of space between Museum and lake front at City Park, suggested by Architect J. B. Benedict.

Macon, Ga.—Plans have been adopted for rebuilding city hall.

Kearney, Neb.—Council is considering election on bonds for establishment of playground.

Maplewood, N. J.—Erection of town hall is being considered.

Binghamton, N. Y.—Division Engineer Paul McLoud is busy preparing plans for new macadamized roads in this county, contracts for which will be awarded at letting of highways to be held at Albany the latter part of this month and latter part of January.

Geneva, N. Y.—Police Committee is considering purchase of patrol wagon.

Cincinnati, O.—Plans have been adopted for proposed viaduct at Willow st.

Covington, O.—Park Expert Kessler probably will be secured to work out plan for improvement of Covington's new park property, recently donated to city.

Springfield, O.—Establishment of public park at Washington and Spring sts. is being considered.

Chester, Pa.—Council has adopted specifications by City Engineer Damon for erection of public wharves at foot of Market st. and Edgemont ave.

Providence, R. I.—Committee on Health is considering advisability of removing ashes from residences in connection with removal of swill and house offal.

Spokane, Wash.—City Engineer Morton Macartney has prepared plans for 20,000,000-gallon Lincoln Heights reservoir; cost about \$80,000.

CONTRACT AWARDED

Newport News, Va.—Street sweeping machine, to Austin-Weston Co., \$236.50.

MODERN BATHS AND BATH HOUSES

WILLIAM PAUL GERHARD, C. E.

Contents—Preface. Historical Notes on Bathing. The Purposes of Bathing. The Different Forms of Baths. The Modern Rain Bath. House and Tenement Baths. Public Bath Houses. People's Baths. Factory Baths. School Baths. Baths for Military Barracks, Prisons and Jails. Hospital Baths. Baths for Clubhouses, Gymnasias, Hotels and Barber Shops. River and Sea Baths. Air and Sun Baths. Medical and Electric-Light Baths. The Water Supply and Plumbing of Bath Houses. Bibliography on Baths and Bathing. Appendix: Bathing in Various Countries. The Dog Bath. Alphabetical Index.

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239 West 39th Street, NEW YORK CITY

PROPOSALS

GRAVITY WATER WORKS SYSTEM

Notice to Contractors

Cimarron, N. M.

Sealed proposals will be received by the Cimarron Water Company, at its office in this town, until 2 P. M., Tuesday, December 20, 1910, for furnishing all materials for and constructing a gravity supply system of water works in the town of Cimarron, New Mexico.

The work will consist mainly of:

26,600 feet, 8-inch. machine banded wood pipe;

34,000 feet 6-in. machine banded wood pipe;

Together with gate valves, fire hydrants, etc., and a distributing reservoir of 500,000 gallon capacity.

Plans, specifications and form of contract may be seen and proposal blanks obtained at the office of the Company, and at the office of T. W. Jaycox, 1608 Broadway, Denver, Colo.

Each bid shall be accompanied by a certified check for \$2,000 and made payable to George H. Webster, Jr.

The right is reserved to reject any and all bids.

THE CIMARRON WATER CO.,

By George H. Webster, Jr., President.

PAVING—THREE MATERIALS

St. Augustine, Fla.

Sealed bids will be received at the office of the City Clerk of St. Augustine, Florida, for grading, curbing and paving Orange Street in the City of St. Augustine, Florida, with either vitrified brick, bituminous or asphalt pavement, according to the specifications on file in the Clerk's office.

Bids will be received up to six (6) o'clock P. M., December 21, 1910, and will be opened at the regular meeting of the City Council at seven-thirty (7:30) o'clock P. M., December 21, 1910.

The City reserves the right to reject all bids.

JNO. M. G. CARRERA,
City Clerk.

FOR SALE

FOR SALE—SECOND HAND Transits and Levels

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Eighteen years

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PLANS, ETC., FOR BRIDGE

Office of City Engineer,

Richmond, Va.

Sealed proposals will be received at this office until 4 p. m., Wednesday, Feb. 1, 1911, for plans, designs, detailed drawings, strain sheets, specifications and proposals for the erection and construction of a reinforced concrete bridge over James River, not to exceed in cost \$225,000, each design and proposal for construction of bridge to be accompanied by a certified check for \$5,000, payable to the City Treasurer as a guaranty of execution of contract. Bond of 50 per cent of the amount of contract, when executed, will be required. The Committee on Streets reserves the right to reject any and all designs and proposals. Information as to the location of site, profiles and present conditions, for submission of plans, will be furnished from this office upon application. Persons submitting designs and bids are advised to examine location and determine for themselves the existing conditions.

CHAS. E. BOLLING,

City Engineer.

SEWAGE DISPOSAL PLANT

Atlanta, Ga.

Sealed proposals addressed to Hon. R. F. Maddox, Mayor, will be received at the Mayor's office until 3 P. M. Monday, December 12, 1910, for the construction of the Peachtree creek disposal plant to be located on Peachtree creek about five miles from the city, the estimated cost of which is approximately two hundred thousand (\$200,000) dollars.

Proposals will also be received at the same time and place for the construction of the Peachtree creek and Orme street intercepting sewers consisting of approximately seven miles of 48-inch concrete sewer with the necessary manholes, excavation, tunneling, culverts, etc., the estimated cost of which is approximately two hundred and seventy thousand (\$270,000) dollars.

Plans and specifications for the above work will be furnished by Messrs. Hering & Fuller, consulting engineers, 170 Broadway, New York City, or R. M. Clayton, City Engineer, Atlanta, Ga., on deposit of twenty-five (\$25) dollars, to be held until the return of the plans and specifications.

The right is reserved to reject any or all bids.

R. M. CLAYTON,
City Engineer.

FOR INFORMATION
or Books relating to Municipal
Matters, write
Municipal Journal and Engineer

PAVING

Circleville, O.

Sealed bids will be received until noon on Tuesday, Jan. 3, 1911, for paving with vitrified brick of Court st., Circleville, O. The approximate quantities are as follows:

41,883 square yards brick pavement, including 6-inch concrete foundation, 2-inch sand cushion, cement or asphalt filler.

16,540 lineal feet straight curb Berea.

940 lineal feet circular curb Berea.

1,670 lineal feet stone edging.

24,636 cubic yards excavation.

Grading at street and alley intersections.

528 lineal feet 24-inch sewer in place.

615 lineal feet 18-inch sewer in place.

10 catch basins.

4 manholes.

Write John W. Lowe, Director of Public Service, Circleville, O., for specifications, blank forms, etc.

Contract will be entered into in five days. Work to begin as soon as weather is suitable.

The right to reject any or all bids is reserved.

AUTOMOBILE FIRE WAGON

Helena, Mont.

Bids will be received by the City Clerk of the City of Helena, Montana, for one 80-horsepower combination automobile fire wagon, capable of carrying 2000 feet of hose and one 35-gallon chemical tank. Bidders must supply with their bids full information as to specifications upon which bid is submitted, also cost of extras generally needed for repairs. There should also be included information as to standardization of these parts.

Bids will be received up to 8 P. M., December 17th, 1910.

The City Council reserves the right to reject any or all bids.

By order of City Council.

J. A. MATTSON,
City Clerk.

New Jersey Civil Service Examination for INSPECTOR OF ELECTRIC SERVICE AND METERS

(BOARD OF PUBLIC UTILITY COMMISSIONERS FOR THE STATE OF
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December 22, 1910

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(23-24)

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(23)

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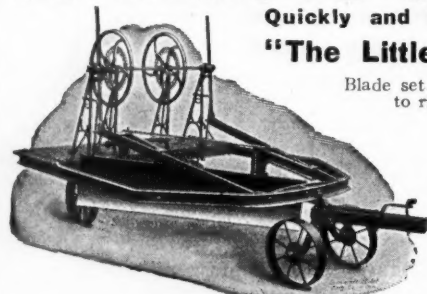
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